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Delivered before the Section of Physiology of the British Association at Oxford on August 5th, 1926,

BY J. B. LEATHES, M.B. OXF., F.R.C.S. ENG., F.R.C.P. LOND., F.R.S.,
PRESIDENT OF THE SECTION; PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF SHEFFIELD.

AMONG natural sciences physiology takes a place which in one respect is different from that taken by any other. It studies the phenomena of life, but more particularly the ways in which these phenomena are related to the maintenance of life. Anatomy and morphology are concerned with the forms of living organisms and their structure; biological chemistry, as distinct from physiology, with the composition of the material in which the phenomena of life are exhibited. The province of physiology, in studying the functions of these forms and of this material, is to ascertain the contributions that they make to the organisation of the living mechanism, and learn how they minister to the maintenance of its life. Function implies ministration, structure for physiology implies adaptation to function, what in a word may be termed design.

THE FUNDAMENTAL ATTRIBUTES OF LIFE.

Ultimate analysis of the phenomena with which physiology deals leads to the fundamental distinction between matter in which life is manifested and matter in which it is not. Life is exhibited only in aqueous systems, containing unstable, perishable combinations of carbon with hydrogen, nitrogen, sulphur, phosphorus, and oxygen, in the presence of certain inorganic ions, those which are present in the sea, the native environment originally of all forms of life; and the inalienable property that such matter exhibits when alive, and that matter which is not alive does not, is that these unstable organic combinations are for ever reforming themselves out of simpler combinations that do not exhibit this property, and do so at a rate which averages at least not less than that at which they break down. This power of self-reformation, spontaneous regeneration, operates not only when living organisms, cells or communities of cells are growing or reproducing their kind; the very maintenance of living existence requires by definition that it should persist. In the absence of water the living process may sometimes apparently be suspended for a time, as it may be if the surrounding watery medium is immobilised by cold; it is a question whether this is anything more than a retardation to a rate of change that is imperceptible by the ordinary methods of observation, and a question how long such suspended animation is possible where it is possible at all. It is only where water has the kinetic activity of the liquid state that spontaneous regeneration of living matter can in general proceed, and then it must, for when it ceases the unstable material ceases to live.

Chemical analogies for this power of spontaneous regeneration, if such exist, can only exist in part; in the present state of our comprehension of it, certainly, it is hazardous to try to trace them. The attempt so commonly made to trace one between the growth of living matter and the growth of crystals in a saturated solution, it is safe to say, is in so many respects on the wrong lines that it is merely misleading. Crystals are not alive. The molecules that constitute the crystal are set in solid formation; so long as the crystal exists they are stable and unchangeable. These molecules collect on the growing crystal, but they exist ready-made in the surrounding solution; they do not come into being by the influence of the crystal; they are themselves so constituted as to take up a set position in relation to each other and to those already ranged side by side in the crystal, as soldiers on the drilling-ground at the word "fall in"; they are available because the solution is kept saturated by the dissolving of smaller but similar crystals that for physical reasons are more soluble in the solution than the larger ones. In contradistinction to this, the molecules that enter into the composition of living matter exhibit the phenomena of life only when permeated with water molecules exercising the kinetic activity of the liquid state; they are unstable and perishable; the added molecules, some of which even during growth and all of them at other times, serve but to replace those that perish, do not exist ready-made; they come into being only in conformity to the pattern and under the influence of those already in existence, a pattern that these alone can use; and they are formed out of material that is chemically different from them.

THE IMPLICATIONS OF SPONTANEOUS DEGENERATION.

Let us for a moment consider what this spontaneous regeneration implies. Of the various chemical components of protoplasm proteins are generally considered the most important, often the only important, ones. The elucidation of the chemical principles upon which the structure of proteins rests, which took place about the beginning of this century, was, like the neurone hypothesis of the structure of the nervous system, an advance the magnitude of which only those perhaps can appreciate who began the study of physiology well back in an earlier one. For a time it seemed in each case that the problem was solved and all that was to follow was simple. Those were great days. The best-known varieties of proteins, when detached and uprooted from the place where they grew, consist of chains of about a hundred, sometimes nearly two hundred, links. Each link is an amino-acid coupled by its acid group to the amino group of one neighbour and by its amino group to the acid group of its other neighbour, a molecule of water being lost at each linkage. There are not more than about twenty different amino-acids, so that some of them must occur several times in the chain; in some kinds of protein one amino-acid may occupy 30 or 40 of the 100 places in the chain. In any such isolated protein it is probable that the order as well as the proportion in which each amino-acid occurs in the molecule is fixed, and it is this specific order and proportion that accounts for the specific character and properties of the protein. What could be simpler? And only yesterday all was so obscure.

It is not recorded that in the rush of this advance anyone stopped to reflect what number of formations such a protein might still possibly have. Supposing it were a chain of only 50 links, a very simple case: if all the links were different the number of possible permutations is denoted by the innocent-looking symbol $\lfloor\underline{50}$. If, instead of all being different, one kind of link recurred ten times, the number would be reduced to $\lfloor\underline{50} / \lfloor\underline{10}$. If, in addition, there were four that recurred four times and ten that recurred twice, it would be further reduced to

$$\lfloor\underline{50} / \lfloor\underline{10} \times (\lfloor\underline{4})^4 \times (\lfloor\underline{2})^{10}.$$

It would now consist of a chain of only 50 links, of which there were only 19 different kinds, and the number of different arrangements of its parts would be about 10^{48}. Astronomy deals with big figures. Light, it is said, takes 300,000 years to travel from one end of the Milky Way to the other; this distance expressed in Angstrom units, 10,000,000 of which go to a millimetre, would be less than 10^{32}. So far are we from knowing the structure of protein molecules. So far are we from knowing what variations in disposition of the parts in such a molecule may not occur without our being within a measurable distance of detecting them. For if the number of possible varieties of a protein whose molecular weight is known, and known to be exceptionally small, and

which contains the several amino-acids in a known proportion, is as great as this, the number that is possible when that proportion may be changed is practically incalculable, each change in proportion being capable of a number of new arrangements that could be calculated, as was done for our hypothetical case.

But in the living cell, where these chains are put together, each link must first be fashioned and then forged into the chain; unfinished chains *in statu nascendi* must exist which our analytical methods can never detect. In such unfinished chains the order presumably in which the amino-acids are linked up is observed, but the proportion must be different from that in the finished product; for in a chain of nearly a hundred links a particular amino-acid—cystine, for instance—may occur only once.

ANALOGY OF CRYSTAL FORMATION.

Now it is possible that the analogy of crystal formation may be applied to the reproduction of the characteristic order in which the linkings occur, and that the parts out of which a new chain is to be formed may be collected and brought into position alongside of the corresponding parts of an existing chain by forces that are similar to those that determine the latticed relations of atoms in a crystal. But something more than this is required to account for the linking up of these links by the loss of water, and still more for the fashioning of the links themselves. In plants all varieties of amino-acids come into being as required; in animals, it is true, some must be supplied ready-made in the medium in which the proteins grow; but even in animals some of them can be formed from material of a totally different nature.

Wherever this is the case we have to suppose that it is by selective emphasis of certain otherwise unemphasised but possible arrangements of atoms or groups of atoms, evidence for the occurrence of which under similar conditions in the absence of life is generally not obtainable. Specific catalysed syntheses must cöoperate with the forces that merely sort out and place in proper order the assembled parts, and must fashion for them the particular links that they need at each step. Specific catalytic agents playing an important part in cell chemistry are familiar in the enzymes found in digestive secretions and also locked away within the cells themselves. There is much to support the idea that such agents act by modifying the chaotic, indeterminate, kinetic agitation of certain kinds of molecules in their immediate neighbourhood in such a way that the relative positions in space of groups capable of reacting with one another tend to become those in which reaction is likely to occur, and to occur in conformity with a certain pattern. The peculiar thing about the chemistry of living matter is not that the reactions that are characteristic in it are novel, but that in the rough and tumble of ordinary liquid systems their occurrence is almost infinitely improbable. Where there is life circumstances exist which make them the rule. Anyone conversant with work in animal metabolism can supply many illustrations; for instance, it has been shown that in a simple solution of the amino-acid alanine traces of methyl glyoxal occur; in the animal body there is reason for thinking the reaction may become practically quantitative. Forces which determine the relative positions of adjacent foreign molecules and so affect their behaviour are something to which there is no analogy in the growth of crystals in a saturated solution.

Moreover, if the forces that determine the reproduction of a certain order in the arrangement of the parts of a protein are similar to those that determine the lattice pattern of a crystal, the crystals with which the comparison is made are solid, and life is manifested only in liquid aqueous systems. The analogy should rather be with the formation of liquid crystals, a phenomenon that is itself as yet too unfamiliar to shed common light on the obscurity of spontaneous regeneration. The ordered disposition of the ultimate components of protoplasmic systems is such as to leave play, generally but little checked, for the fluid properties of water, and in some modified degree, too, of molecules and ions dissolved in water. Even a solid jelly may include within its protein framework a hundred times its weight of water in which diffusion is free to take place almost as if the framework were not there, and protoplasm, with commonly twenty times as much protein in it as this, more often resembles a fluid of varying viscosity than a solid gel, which means that the great protein chains float and drift in the whirlpool of kinetic agitation, observing, it may be, so far as is possible, certain unstable relations to their kind, but with no rigid fixity. It is commonly felt that the behaviour of unicellular organisms makes the hypothesis necessary that there is an insoluble surface layer that keeps the watery contents of the cell from dispersing in the water that surrounds it. Much experimentation, and no lack of speculation, has not made clear what the nature and structure of this limiting layer is. It may be that the flexible cohesion at many alternative points between clinging floating chains of amino-acids, the innermost of which are made fast to the nucleus, may go some way to maintain the identity of the cell and prevent its contents from scattering.

CHEMICAL MEANING OF MATERIAL LIFE.

But in the chemical make-up of protoplasm, proteins, the most abundant component, are not the only ones that are necessary. Pre-eminent among the others are the nucleic acids. When we consider what has been learnt of the behaviour and of the chemical composition of the nuclear chromosomes, and that according to Steudel's reckoning the nucleic acids form 40 per cent. of the solid components of these chromosomes, into which are packed from the beginning all that pre-ordains, if not our fate and fortunes, at least our bodily characteristics down to the colour of our eyelashes, it becomes a question whether the virtues of nucleic acids may not rival those of amino-acid chains in their vital importance. From Steudel's figures it can be reckoned that there are about half a million molecules of nucleic acid in a single sperm cell of the species with which he was working.

And in addition to nucleic acids there are also strange compounds of higher fatty acids containing suspiciously significant groups, identical in their general character with those found also in nucleic acid—namely, phosphoric acid, organic bases, and sugar; and besides these there are the mysterious sterols. All of these are frankly insoluble in water, and yet have in some part of their composition features that make them not indifferent to water or even to the molcules and ions that exist in true solution, in the liquid state, within the cell. The physical condition of these insoluble substances in the aqueous system of the cell is still little understood. All that can be said with certainty is that they must modify its homogeneity even more than the long floating chains of amino-acids, however much these may be linked together one with another. If the characteristic behaviour of living matter is rightly regarded as due to the order that it introduces into the movements and spatial relationships of foreign molecules in its vicinity, then these insoluble components may well be expected to play a leading rôle by forming films and surfaces that permeate its texture and delimit its parts.

Such an analysis of the chemical meaning of material life viewed in the light of scientific facts has to be largely an exercise of the imagination, but it may present itself as an intellectual necessity. If it is right to regard the power of spontaneous self-regeneration as the distinctive property of living matter, it is not intellectually possible to be content with a phrase and dismiss it. A phrase is itself an image, and an image, however shadowy, has parts and dimensions. Those who feel it an intellectual necessity to explore unexplored lands cannot procure maps, but that does not justify their setting out with no forethought or reasoned plans.

The beginning of life, if it is an intellectual necessity to trace this, would thus appear to have been in the

coming together of atoms of certain elements in such a pattern that this power in its simplest form resulted from its design. Some might call this event fortuitous, others the predictable outcome of the inherent properties of those elements, the inevitable operation in the course of time of the laws of chance. Those who call it fortuitous may go so far as to regard the whole history of life as fortuitous, and give priority to the concurrence of the atoms over the properties and functions that are revealed by the concurrence. The others may look on life as the fulfilment of the destiny of these elements, and give priority to the potential properties of matter over the concurrence which was no more than their epiphany.

SURVIVAL POWER OF CERTAIN ATOMIC GROUPINGS.

If this analysis is approved and the distinctive property of living matter, the power of self-regeneration, depends upon the power of limiting the movements and directing and controlling the spatial relations of surrounding molecules so as to modify their chemical behaviour, it is the exercise of this same power that leads to the formation of substances such as starch, glycogen and fats; and in so far as such substances contribute to the regeneration of the living matter, the power of forming them contributes to its survival. Where energy is necessary for such synthetic rearrangements of adjacent matter—where, that is, the rearrangement involves coercion of atoms into positions of strain in which they have the potential energy of position which we call chemical energy—this energy may be derived from the radiant energy of the sun or from the combination of oxygen with adjacent organic matter. In the latter case the combination is again a manifestation of the power of ordering the disposition of surrounding molecules and directing their movements so that they behave as in other circumstances they would be but little prone to do. The energy so liberated, besides contributing to the formation of new living matter or of the material to be used in its formation, may serve in other ways to promote the processes by which life is maintained. It may accelerate them by imparting increased kinetic activity or rise of temperature, or may bring about movements that are resisted by external forces, and so enable the living system to do work.

This is all merely a restatement of the commonplaces of biology, necessary only as part of the attempt to correlate them physiologically with the fundamental property of that which is alive to regenerate itself at the expense of material that is not alive. This faculty implies the power of introducing order into the chaotic movements of adjacent matter in conformity with patterns that it possesses. It is a faculty resident in material that is capable of incalculable variation. The number of permutations of its parts that are possible without affecting the results of such analysis as is practicable defies calculation. Their calculation, were it possible, would lead to figures that are so large as to mean no more than the dimensions of the universe. Some of these permutations confer synthetic powers which others do not. When they appear, are they not what biologists call for short mutations? But when they appear, if they retain the power of self-regeneration, and if they minister to its maintenance, they will ipso facto survive. For whatever promotes persistence of this power must itself survive.

A disposition of matter in molecules or aggregates, unstable and incalculably variable, that has and retains the power of determining the disposition of matter not yet so disposed in such a way as to conform to its own disposition or to patterns which help it to exercise this power, is all that must be premised for the whole of evolution to follow. Variations that do not or cease to contribute to the retention of this power do not survive. The condition of survival is ministration to self-regeneration, that is to the maintenance of life.

Before the days of vertebrates, in pre-Silurian time, an unstable variation in the disposition of atoms and organic combinations of atoms occurred in certain types that was mainly protein in character, a protein to the making of which little short of 200 amino-acid links must contribute. Coupled to this protein, which probably is not the same in all species of animals in which it is found, is another group containing iron that is probably always the same. This group is of remarkable nature, and is closely related to one that occurs in the far older substance chlorophyll. This complex substance hæmoglobin had the power of attaching to itself two atoms of oxygen for each atom of iron that it contained in such a way that it could be readily detached and made available for effecting oxidations. Such was the service that this variation rendered that it is safe to say that without it there could be no vertebrate creation. It is this service that has made it possible for it to survive to this day, when in the human species alone it is being produced at the rate of about 10,000 tons a day. The story of the service of chlorophyll would, of course, be more remarkable than this.

Natural selection applies to the survival of the chemical forms of living matter as it does to complex living organisms. These forms, infinitely protean in their variety, survive and persist in so far and so long as they minister to its self-regeneration. It is the principle of survival by service. Function alone gives permanence to structure. Structure without design is a pathological excrescence that has in itself the seeds of its own destruction. What does not minister to self-regeneration has no enduring share in life, for self-regeneration is the key to life.

Why is it that what may be termed official physiology takes so little cognisance of the doctrine of evolution? These branches of biological study appear to follow courses so exactly parallel that they never meet.

The doctrine of evolution digs down into the foundations of scientific philosophy. If a physiologist addressing physiologists ventures to say anything on this subject of supreme appeal to all biologists it must be in exaltation of the work of those who have approached it from the morphological side, and it may be in hopeful anticipation of the ultimate share in the elucidation of some of its problems to be borne by physiology.

PROPERTIES AND BEHAVIOUR OF CELLS.

On the part that function plays in the determination of structure it is to be supposed that physiology will ultimately, at any rate, have something more to say. May I submit to the consideration of physiologists certain points in the physiological development of the machinary of the body where, unless I am mistaken, it is possible to detect the operation of function in determining the design of the machine? The properties and behaviour of cells result from the properties and behaviour of the material composing them. When a muscle cell contracts this is, in general terms, a reversible rearrangement of its parts in response to some alteration in the distribution of forces within or about it due to a disturbance from without. Such reversible reaction to adequate disturbance is a property common in the material of which living cells are composed. In addition to this reversible type of reaction there are irreversible reactions which are characteristic of other kinds of cells, and it is what we call connective-tissue cells that I would ask you to consider. There are several kinds of connective-tissue cells, but they are alike in that they produce and discharge into their vicinity material of a characteristic composition; in some of the commonest this material is chemically collagen, the substance out of which gelatin can be obtained. In course of time these cells come to be embedded in the material which they deposit about themselves and so form one kind of connective tissue. Cells capable of behaving in this way are found, however, which have not yet exercised their faculty; these fibroblasts are then undifferentiated wandering cells that have found no abiding place in the community in which they have their birth. What it is that makes them settle down and start producing the material in which they come to be embedded has never yet been determined. But the most striking structures to which they give rise

are the tendons and aponeuroses that make the muscles fast to the bones, and the ligaments that bind the bones to one another. The material that they deposit is composed of inextensible fibres that lie in the case of tendons, at any rate so exactly and exclusively in the line of the resultant of the tensions set up in the muscle to which they attach themselves, that it is difficult to believe that the disturbance which starts them producing their characteristic secretion is anything else than the pull exerted on them by the muscle-fibres to which they are attached; the recurring external disturbances that produce reversible states of tension in the muscle, indirectly producing in them an irreversible reaction, which consists in the discharge of material that by its inextensibility can transmit the tension along the line of the force that provokes its deposition. In their simplest form cells of this kind deposit the wavy fibres in areolar tissue which, when straightened out under the action of a displacing force, set a limit by their inextensibility to the dislocation of the part first affected, and so distribute the action of the displacing force over surrounding areas. It is interesting to note that the origin of cells of this kind has been traced to the mesothelium cells that line tissue spaces and serous cavities, the clefts that make the gliding displacements of parts over one another possible. The deposition of fibrous material seems here, as in the tendons and ligaments, to be the result of reaction to the recurring disturbances set up by displacements, such, for instance, as those of the lungs, the alimentary tract, the heart and pulsating vessels, and the deposition occurs in the line of strains set up by the displacing forces. The service rendered by this behaviour of the cells is that the fibres which they deposit, in virtue of their inextensibility, limit the extent of displacement at any one point by distributing it to surrounding parts.

The other component of areolar tissue, the elastic fibres, is similarly produced by other cells. These fibres take a straight course between their attachments; displacements in the line of their deposition are rendered possible by their stretching, and are recovered from by their elasticity.

The contribution made by such cells to the fabric of the body appears to result from the recurring operation of disturbances, to which they react by depositing fibres along the lines of disturbance.

FORMATION OF THE SKELETON.

More striking are the properties of cells upon which the formation of the skeleton depends. The cells that make bone not only secrete fibrous collagen, they also encrust the fibres with insoluble lime salts, and it has long been subject of comment that the rigid bone that results always comes to lie in the line of prevailing strains and stresses. The analysis of the structure, for instance, of the head and neck of the human femur, by Wolff and others who have followed him, shows how strictly this is true. Calculations prove that no particle of bone lies anywhere but where the strains dictate. We can predict with certainty, it seems, that it will be found that bone cells are composed of material that in reacting to physical forces directs, in constant relation to the line of action of those forces, the deposition of the substances which make up this connective tissue. Bone can only arise where strains and stresses set up this reaction, and the greater the strain or stress the denser the deposit. When a bone is fractured many bone cells are dislodged, and in the abundance of nutriment that ruptured vessels supply, these cells, released from their imprisonment, multiply. At first the force of gravity and the twitching of muscles acting on the soft semi-fluid tissues between the broken ends of the bone supply stimuli that are indeterminate in direction, and such reaction as occurs results only in the formation of loosely ordered calcareous fibres; but even this soft callus gives some degree of rigidity, sufficient to restrict the strains gradually to more and more clearly defined lines along which in proportion a stronger reaction can take place. Once it is established that bone corpuscles react to strain and stress by discharging collagen, the intimate spatial disposition of which, as well as of the lime salts with which it comes to be encrusted, is determined by the directing forces to which it is exposed; and once it is recognised that the law of spontaneous regeneration requires that this reaction will persist in proportion to the prevalence of these forces, not only must the gradual replacement of callus by appropriate permanent bone necessarily follow, bone in which no particle persists except it be in the line of constantly recurring stress and strain, but it will also necessarily follow that the position of every spicule of bone in the skeleton, cancellous or compact, is the expression of a physiological reaction to the forces of gravity and muscular tension. The evolution of the machinary of the connective tissues seems to be not entirely the result of natural selection and the survival of individuals in which this machinery chanced to be of appropriate design. The appearance in early vertebrates of the material that is characteristic of the bone corpuscle seems to have ensured that skeletons would take a shape determined by the direction of the forces to which these corpuscles were exposed, and that the formation of this skeleton is as much a reaction to recurring stimuli as are the reflexes, composite movements and postures characteristic for the species.

This conception of the way in which the vertebrate connective tissues take their shape transfers a large share of the development of the bodily form back into the nervous system, in which the machinery is stored that directs and determines the habitual movements and postures that in reaction to external disturbances are specific. A physiological account of the evolution of the nervous system, one certainly that is based on the chemical constitution and chemical behaviour of its component parts, must seem almost infinitely remote from practical investigation. But the work of Pavlov has made one thing clear, that by a physiological reaction in it machinery may come into existence which did not exist before. The repeated occurrence of a disturbance at times that are uniformly related to the normal operation of existing machinery results in the acquirement of a new reaction which must require machinery that is new. It is rendered probable, if not proved, that this new machinery is situated in what may be called the growing point of the central nervous system, the cortex of the cerebral hemispheres, the part where all is not cut and dry, where cells retain more of the properties of the developing neuroblasts, the properties that enable them to grow out through the embryonic tissues along courses that make it certain that the maturing organism will behave in a manner true to type. In the formation of a conditioned reflex two events are made to occur in the cerebral cortex at times which are uniformly related to one another; one of these events, from the constitution of the nervous system, necessarily results in a certain activity of some muscle or gland, the other has been hitherto in no way related to such a result; after many repetitions of the association of these events it is found that that one which previously had never resulted in this particular activity, comes to have this result as certainly as the other.

The sight and smell of food in any hungry animal results in the secretion of saliva because the cells to which the effect of these visual and olfactory stimuli is referred are anatomically connected with cells that set the salivary gland in action; the cells on which some particular sound takes effect are not anatomically connected with them, and this particular sound has therefore no effect upon them. But with the establishment of the conditioned reflex the anatomical connexion comes into existence. As a result of a functional reaction of nerve cells to disturbances in other nerve cells with which they were not previously anatomically connected, a structure appears which is indistinguishable so long as it lasts from the structures that constitute any other reflex arc. The conditions that determine its persistence or effacement have been, and are being, studied as thoroughly as were those

which allow it to appear. The outcome of these studies must be of incalculable importance in evolutional physiology. They are being watched with the keenest interest doubtless by all biologists, but more especially by those who believe that physiology has to take a much bigger part in the solution of some of the fundamental difficulties of biological science than it has been able to take in the past.

EVOLUTIONAL HISTORY OF LIFE.

But if and when it is possible to trace the origin of structures to functional reactions of cells, and to reactions that depend upon the chemical properties of the cell substance; and if and when this is possible not only in the connective tissues, but also in the nervous system, the functions of which have so controlling an influence on the operation of every part of the body; until it becomes clear that the results of changes in such influence reappear in succeeding generations, the study of functions can have no bearing upon the ultimate problem of biology, the evolutional history of life upon the earth. Pavlov communicated to the last International Congress of Physiology in 1923 some results of experiments that he had done upon this subject which, when confirmed, would electrify the atmosphere. Conditioned reflexes that are established only after many—80 or 100—repetitions of the associated stimulus, in each succeeding generation require fewer and fewer repetitions, and in the fourth may be established after only four. In April of this year he wrote to say that owing to other work he had not been able to give the necessary time to confirmation of these results. We are content to wait.

In the great question whether characteristics developed in the life of an individual have any influence on descendants, experimental evidence must come slowly. In what is called parallel induction a step has been taken which is probably of greater importance than is generally conceded. External influences that affect the bodily characteristics of an organism affect also the germ plasm in such a way that these characteristics appear in the first, and even, in a less degree, in the second generation, born after the external influences have ceased to operate. While such experiments furnish evidence only of a temporary change in the properties of the germ plasm, one that may be put down to the lodgment in it of unassimilated foreign matter that is gradually eliminated, the fact that the eternal germ plasm has been shown to be subject to temporal influences must not be belittled. A true mutation is not eternal. Out descendants may be able to dispense with hæmoglobin. Whether the hereditary melanism that in certain moths, it is said, can be induced by food infected with manganese, is something more than such parallel induction, I hope there may be some present who can say.

Physiological inquiry is a stream that has many sources; its waters gather from quarters far removed from one another. A marvellous meeting took place in the early years of this century when the forgotten experiments of Mendel came to the surface again, and found corroboration in the cytological studies that from about the same time had pursued their slow obstructed way above ground in the endeavour to elucidate the changes in the nucleus of maturing germ cells. In a resting germ cell the chromosomes form an even number, characteristic for the species; they consist of half that number of pairs of homologues, one of each pair descended from the paternal element in the last zygosis, the other from the maternal. At one of the cell divisions by which the germ cell gives rise to the mature gamete, with half the characteristic number of chromosomes, there occurs a segregation of the two members of each pair so that they pass into different gametes; the exact cytological equivalent of Mendelian segregation of allelomorphic pairs of characters. To-day the study of genetics and of the "topographical anatomy of the chromosomes," with its "groupings" and "crossings over," seems to call out for chemical assistance. It may be that in the lifetime of some of us those confluent streams of thought and experiment are to be joined by yet another that rises in the vast, remote, and, as it must appear to some, muddy swamps of physiological chemistry; and it then, forgetting its "foiled, circuitous wanderings," will form with them a "majestic river, brimming and bright and large."

A STUDY OF
SPRUE AND ADDISONIAN ANÆMIA.

BY H. B. NEWHAM, C.M.G., M.D. DURH., M.R.C.P. LOND.,
LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE;
AND
R. M. MORRIS, M.B., B.S. LOND.,
LATE HOUSE PHYSICIAN, HOSPITAL FOR TROPICAL DISEASES.

WITH CONCLUSIONS BY
P. H. MANSON-BAHR, D.S.O., M.D. CAMB., F.R.C.P. LOND.,
PHYSICIAN, HOSPITAL FOR TROPICAL DISEASES.

IN the present study an attempt is made to emphasise some points in connexion with sprue with reference to Addisonian anæmia, as it is felt that the differential diagnosis is often a difficult matter in individual cases.

The subject is treated from two points of view; that of the clinician, and secondly, of the hæmatologist. From the clinical aspect sprue presents certain cardinal features, described by Low[1] thus: "loss of weight, diarrhœa with white frothy stools, tongue and mouth lesions, anæmia, and shrinkage of the liver," but it is in only a proportion of cases that all these points are manifest.

Three groups of cases may be distinguished: (A) With marked gastro-intestinal and mouth symptoms but without noteworthy anæmia. (B) With gastro-intestinal and mouth symptoms and accompanied by definite anæmia. (C) With recurrent attacks of mild gastro-intestinal or mouth symptoms and severe anæmia. This group is somewhat small and is more or less confined to chronic cases in older patients.

In the present paper it is not intended to deal with Group (C).

In order to arrive at the approximate number of cases falling into Groups (A) and (B), 90 cases of sprue have been taken, all treated in the Hospital for Tropical Diseases, London, between the years 1920–25. Of these, it is found that 45 presented a blood count of less than 4,000,000 red corpuscles and can therefore be included in Group (B).

It is interesting to note the remark of Gulland and Goodall,[2] when discussing Addisonian anæmia: "Diarrhœa may be the main symptom and we have seen cases in which the diagnosis of . . . sprue . . . had been made before the blood was examined." This illustrates the difficulty but does not give the solution. There are several points in common between the two diseases especially in the type of Addisonian anæmia with alimentary symptoms.

Ætiology.

In both diseases a causative agent has been incriminated, in neither is its guilt proven. In both it is thought primarily to attack the alimentary canal.

The *sex-incidence* in Addisonian anæmia is given as 2 males: 1 female (Thursfield[3] Tidy[4]—in the present series of 90 cases of sprue 59 were males and 31 females—thus giving approximately a ratio of 2:1. This ratio is not absolutely trustworthy as the accommodation for female patients during half the period under review was extremely limited. The general impression gained is that females predominate.

The *age-incidence* of sprue, males show an average age at onset 42 years (extremes 22 and 68), and females 40 years (extremes 20 and 62); again these

figures compare closely with those usually accepted as obtaining in Addisonian anæmia.

The occurrence of *familial or hereditary cases* in Addison's anæmia has lately attracted much attention (Hurst),[5] and in sprue Manson-Bahr [6] quotes cases in husband and wife, whilst in the present series is a severe case of sprue occurring in a man, whose mother had died of sprue in India some years previously.

A striking difference between the two diseases is seen when the *geographical distribution* is considered. Addison's anæmia has a world-wide sway, whilst sprue is peculiarly limited to certain areas.

The 90 cases under review reveal the following: India (46), South China (15), Malaya and Ceylon (7 each), Burma and the Philippines (2 each), and Brazil, Nicaragua, Palestine, and the West Indies (1 each), as well as a remainder of 7 seamen who have spent much time in Far Eastern seas. The length of residence in these areas varied from 19 months to 48 years. In 10 cases the disease did not develop until the return of the patient to this country. It is extremely doubtful whether sprue ever occurs indigenously in Great Britain.

Whilst sprue is fairly frequently seen, it is necessary to sound a warning against too readily diagnosing it in anæmic patients with diarrhœa on their return from the tropics, who may be cases of true Addisonian anæmia.

Wherein, then, lie the distinguishing features? Taking the 45 cases showing anæmia, the differences may be given under the headings of (1) type of onset, (2) symptoms and physical signs, (3) course of the disease.

Type of Onset.

In Addisonian anæmia, the onset is notoriously insidious, but in 19 of the sprue cases it was sudden; in 7 of these occurring in the course of some other condition—viz., pregnancy or puerperium 4, dengue 2, acute intestinal amœbiasis 1. When coming under observation the disease had been in progress for periods from two weeks to seven years.

Symptoms and Physical Signs.

The outstanding symptom of sprue—diarrhœa—was present in all the 45 cases, and at some stage of the disease could be accurately described as consisting of copious, white, frothy, liquid, or partially liquid, stools, having a characteristic odour, sour and disagreeable. There is a marked tendency for this to occur in the morning, but in a few cases it was limited to the afternoon. The number of stools per day ranged from 1 to 12.

Cabot [7] states that diarrhœa was present in 60 per cent. of his American cases of Addison's anæmia, but gives no details as to the character of the stools. Gulland and Goodall [8] speak of "chrome yellow diarrhœa," whilst Schneider [9] has been at great pains to demonstrate the increase in pigments in both fæces and urine in Addisonian anæmia. In a somewhat limited experience of the latter disease, we do not recall a case showing stools in any way resembling sprue.

Of the *sore mouth and tongue*—present in 38 of these cases—it is necessary to treat in greater detail, owing to the prominence given to this feature in Addisonian anæmia by Hunter, to the extent of suggesting an alteration of terminology.[10]

This authority describes numerous cases of Addisonian anæmia with glossitis [11] from which may be quoted:—

1. In early stage "great tenderness on mastication when hot foods are taken. Tongue raw and flabby: red and fiery with smooth patches." Lesions "extending to anterior pillar of fauces." Six months later "tongue free from papillæ . . . fiery redness . . . inflamed vesicles."

2. "Small round vesicles . . . on edges of tongue, &c., . . . leaving whitish spots with a zone of congestion."

3. "Tongue raw and fissured . . . a deeply drilled-out ulcer on tongue."

The points he appears to stress are the extreme redness of the tongue before the anæmia becomes too severe, the occurrence of glossitis in the *early* stages and the remarkable periodicity (Fig. 1).

Carnegie-Brown [12] states that the earliest change in acute cases of sprue is a diffuse inflammation, especially involving the fungiform papillæ, with the occurrence of yellow vesicles—aphthæ—in crops at irregular periods and spontaneously subsiding. Later changes destroy the filiform papillæ giving the appearance of prominent bright red swollen fungiform papillæ on a smooth glazed tongue. Should the disease be further prolonged, even these papillæ are involved and appear as if shaved off and have a glazed flat surface (Fig. 2). Cracks and fissures make their appearance and, with the recurring crops of aphthæ, complete the picture. Dutch authors—De Langen and Lichtenstein [13]—in their account are in close agreement with this. In our cases examples of practically all these stages were noted.

In distribution the lesions included the tongue, particularly the tip and sides, the floor of the mouth, the buccal mucosa, the pillars of the fauces, and the uvula. Favourite sites are the inner aspect of the lower lip and the vicinity of the lingual frenum.

The aphthæ characteristically occur in crops. Each crop usually consists of many aphthæ, but may be represented by a single aphtha only. In one case 41 vesicles were present at the same time, and in others with sore mouths no definite vesicles were ever seen. In size they varied from less than pin-head to ¼ in. in diameter. After lasting from one to seven days they disappeared, but in one severe case rupture of the vesicles produced several ragged superficial ulcers up to ¼ in. in diameter. In some the tongue was pale and thin, with glazed areas and with a tenderness out of all proportion to the slight degree of excoriation patchily present, but in these a lens often showed the flattened fungiform papillæ in large numbers. These same papillæ were more often to be seen with the naked eye as prominent hyperæmic and swollen red dots on the surrounding pale expanse. In no case could the tongue have been described as "fiery red." The relation of the sore tongue to the diarrhœa is not easily made out—in some cases the two symptoms definitely alternated, in others the severest phases of each coincided.

From this it will be seen that the phenomena cannot be used in a differential diagnosis. We recall Hunter's own warning [14] that the glossitis he describes is only specific when accompanied by a "definite clinical picture of Addisonian anæmia."

Abdominal flatulence, especially severe before the bowels are opened, is a most distressing symptom in sprue, and occurs with a frequency—40 cases in 45—quite unknown in Addison's anæmia; similarly *œsophageal pain*, or a pain referred to the mid-sternal line brought on by swallowing even fluids (16 cases), is rare in the other disease, although Hunter [15] refers to a similar pain in a case of Addisonian anæmia. It is presumably due to the extension of the oral condition down the alimentary tract.

Vomiting (11 cases) and *anorexia* (10 cases) are present in sprue, but are perhaps more common in Addison's anæmia, which also applies to *loss of energy* (8 cases) as a prominent symptom.

Alteration of temperament is not frequently noticed in Addison's anæmia, but no less than 12 cases of the present series themselves complained of their increasing irritability and unreasonableness, and in the majority of the others their friends had made similar observations. This change is often most apparent, and the return of good humour may be used as an index of a return to better health.

Sensations of *cramps* in the lower limb muscles (6 cases) may be complained of in both diseases and are probably the result of anæmia per se; but of an essentially different character is the occasional appearance of *tetany* (3 cases). This probably does not occur in Addisonian anæmia. Loss of weight was apparent in 43 out of the 45 cases and is a most valuable distinguishing feature, especially in its

severity—a loss of 2 to 4 st. in weight in less than one year being not uncommonly recorded. On an average, in a moderate case with anæmia, it may be given as about 1 st. should treatment have been delayed for as long as six months. It is this feature which is responsible for the emaciated appearance of so many of the patients, and provides a guiding contrast to the plump sufferer from Addison's anæmia. Pari passu, the *skin* seldom (2 cases in 45) shows any tendency to lemon tinting, but is more characteristically dry and wrinkled, with a dull, earthy tinge like that of chronic intestinal stasis.

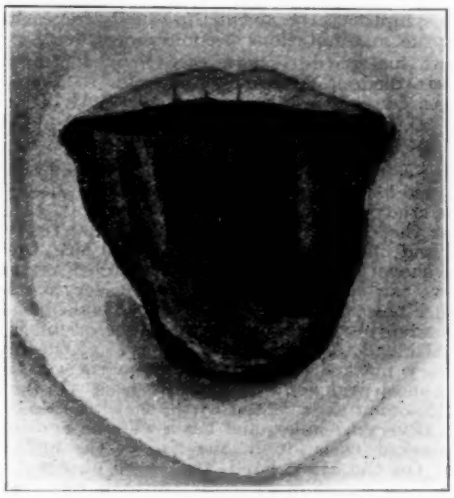
Pyrexia occurs (10 cases) in sprue as in other severe anæmias. It may reach 103° F. and be distinctly prolonged. The *abdomen* in sprue at once attracts attention, the wall is invariably thin and often distended, with especial prominence in the sub-umbilical area. Percussion gives a tympanitic note well into the flanks. The tenuity of the wall may be such that peristalsis becomes visible (7 cases). Rogers [16] states that the liver may be enlarged in the early stage and that it then shrinks, but by the time the patients were seen this initial enlargement was not found, not even in a case with acute onset two weeks before.

In no less than 40 of our cases, the *liver dullness*, as measured in the right mammary line, was definitely diminished. Cabot [17] notes enlargement of the liver in 35 per cent. of his cases of Addison's anæmia but does not mention diminution in size. The same authority notes enlargement of the spleen in 27 per cent. of Addison's anæmia. In no case of sprue was this feature found, except temporarily in one undergoing treatment, when a relapse of benign tertian malaria occurred as a complication. The cardio-vascular system presents the features to be expected in a severe anæmia—poor cardiac sounds, hæmic murmurs, and a low blood pressure. Organic disease of the central nervous system, such as subacute combined degeneration, is as yet unknown in sprue. With reference to sprue, de Langen and Lichtenstein [18] state "there is no typical picture of gastric function; sometimes normal free acid is present, sometimes hyperchlorhydria, or again achlorhydria." Fractional test-meals in five of the cases under review yielded achlorhydria in two, hypochlorhydria in two, and hyperchlorhydria in one—this latter without other demonstrable cause. It is almost superfluous to recall the practically invariable achlorhydria of Addison's anæmia.

Course of the Disease.

In Addison's anæmia repeated and superficially complete, remissions have always been accepted as characteristic; such peculiar periods of freedom from symptoms were apparent in 22 out of our 45 cases of sprue, usually, but not always, after strict dietetic treatment. The length of the remission varied from three months to ten years—in this latter case "reinfection" may have occurred as the whole period was spent in India. The importance of the correct diagnosis is manifest when the question of therapeusis is considered. In Addison's anæmia, arsenic, usually given by the mouth, is our sheet-anchor with the acid treatment (Hurst) [19] as an adjuvant; in sprue, of the former, all observers agree on its harmful effects, and of the latter, no one has produced any evidence of its efficacy. In both diseases blood transfusion is valuable, and its benefits are certainly more likely to be permanent in sprue.

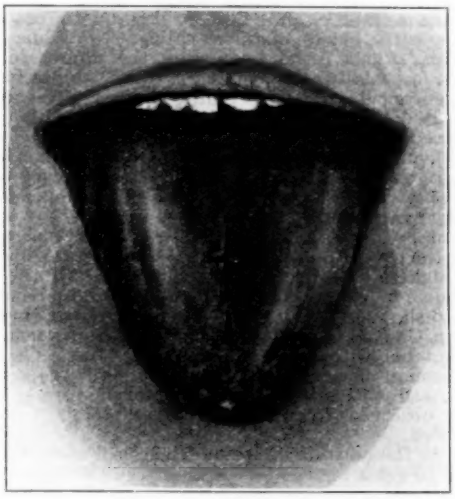
FIG. 1.



[*Philip Manson-Bahr pinx.*

The primary glossitis of Addisonian anæmia. Note the general destruction of papillæ, the raw surface on the dorsum of the tongue. The general glossy appearance and the superficial fissuring at the periphery of the organ.

FIG. 2.



[*Philip Manson-Bahr pinx.*

The primary glossitis of acute sprue. Note the aphthous ulceration at the tip of the organ, the atrophy of the filiform papillæ in the immediate vicinity, and the inflammation of the fungiform papillæ. There is superficial central fissuring.

Prognosis.

This is a difficult topic, as it is not now possible to trace most of the cases of this series. Seven of these died; the rest left hospital considerably improved and in most instances free of symptoms with regained weight—in one case 3 st. in 12 weeks' treatment. Seven of these last are known to be still free of any signs or symptom of sprue after a period of two and a half years. In a few others the disease, whilst not eradicated, is under control and causes no trouble.

The Blood in Sprue.

The degree of anæmia associated with sprue may vary very considerably in different cases. One may have a very severe degree of anæmia where the symptoms of the disease in the alimentary system are not very severe. On the other hand, the most marked alimentary disturbance may be associated with only a moderate amount of anæmia. Generally speaking, however, in the majority of cases of severe sprue, and especially if it has been of considerable duration, the anæmia is grave.

Of 12 cases of well-marked sprue (7 male and 5 female) which have recently been under treatment at the Hospital for Tropical Diseases and whose blood has been closely studied, the accompanying table (I.) shows the main points in the composition of the blood when first coming under our care. The duration of the disease is reckoned from the onset of symptoms to the date of admission to this hospital. The differential count is based on a count of 500 leucocytes, and the percentage of hæmoglobin has been estimated by Van Slyke's gasometric method.

The blood picture associated with the anæmia of sprue has been described by various authorities as being very similar to that obtaining in Addisonian anæmia. Thus Nolen[20] states that it is sometimes impossible to distinguish sprue from Addisonian anæmia. In some of his cases of sprue he found the complete blood picture of Addisonian anæmia, in others only the high colour-index.

Manson-Bahr[21] and Low[22] also quote cases of sprue with blood pictures similar to Addisonian anæmia. This is borne out by the figures in the chart, especially the commonly high colour-index, the leucopenia, relative lymphocytosis, presence of nucleated red cells (the number quoted is that obtained in doing a differential count of 500 leucocytes), and the marked anisocytosis and poikilocytosis.

Just as these more marked features vary considerably in cases of true Addisonian anæmia so similar variation is to be noted in cases of sprue anæmia. As regards colour-index, all of our cases, with the exception of two, give a figure exceeding 1·0, the highest figure recorded being 1·44. Of the two instances in which a figure below 1·0 has been recorded Case 6 shows only a very moderate degree of anæmia, but in Case 11 a most profound degree of anæmia is present but with a low colour-index. Just as in true Addisonian anæmia a high colour-index is the general rule, well authenticated cases of that disease have been observed in which an index below 1·0 was obtained.

So in the anæmia of sprue, when well marked, it is usual to get a figure of more than 1·0. Still, cases do occur from time to time even when the anæmia is lessened, and in many cases of severe sprue with a profound degree of anæmia in which the patient makes a good response to sprue treatment the improvement in the anæmia is both marked and rapid. One of our cases, who on admission had a red cell count of 1,620,000 and hæmoglobin 40·7 per cent., six weeks later showed an improvement to 4,000,000 red cells and 80 per cent. hæmoglobin on dietetic treatment alone.

It is realised that an improvement in the blood condition comparable to this may occasionally be seen in cases of true Addisonian anæmia but is by no means of common occurrence. More commonly the blood will improve slowly up to a moderate degree, and either remain at that stage or more usually relapse again. Moreover, the relapses in Addisonian anæmia are commonly rapid in their onset, whereas in the anæmia accompanying sprue, if relapse occurs, it is gradual, and accompanied by a recrudescence of the sprue symptoms, the anæmia gradually increasing as the sprue manifestations become more severe.

Scott has recorded two cases[27] in which sprue patients died of Addisonian anæmia, so that both diseases can apparently occur concurrently.

Price-Jones Curves.

Price-Jones's graphic method of recording the size of the red blood corpuscles has proved of marked value in the study of cases of Addisonian anæmia. He has shown that by accurately measuring 500 red blood cells, and charting the number of each size, the size being shown horizontally and the number vertically, a curve can be obtained which differs very markedly whether normal blood, Addisonian anæmia blood, or blood showing secondary anæmia be studied. In normal blood the variation in the size of the cells is not very marked, and a uniform curve is obtained with a sharp peak and with a narrow base. In the case of Addisonian anæmia the whole curve moves to the right, is very irregular, and has a wide base, owing to the marked variation in the size of the individual cells. On the other hand, the curve obtained with blood from a case of secondary anæmia more closely approximates to that of normal blood, but the base of the curve is usually somewhat wider and there is a "shift to the left" of the peak of the curve. We have applied Price-Jones method to our study of the anæmia associated with sprue in ten of our cases, basing our results on an accurate measurement of 500 red cells in each instance. In only three instances of these ten cases are curves obtained approximating to those seen in Addisonian anæmia, but even these do not exhibit the marked irregularity and widely extended base of the curves in Addisonian anæmia. A chart is appended showing the curve obtained in Case 1 (Fig. 3).

TABLE I.—SHOWING THE CONDITION OF THE BLOOD IN 12 CASES OF SPRUE.

Case No.	Date in 1925.	Duration of disease.	Hæmoglobin (Van Slyke) per cent.	Red cells per c.mm.	Colour-index.	Leucocytes per c.mm.	Lymphocytes per cent.	Large mononuclear per cent.	Polymorphonuclear per cent.	Eosinophiles per cent.	Nucleated red cells per 500 leucocytes.	Anisocytosis.	Poikilocytosis.
1	25/6	4 y.	40·7	1,620,000	1·2	4000	52	1·0	46	1·0	2 normo. 2 megalo.	+ + +	+ + +
2	30/10	9 m.	86	3,900,000	1·1	6000	45·6	4·4	40	10	Nil.	+	—
3	9/11	8 m.	85·6	3,700,000	1·16	7000	30	1·0	68	1·0	Nil.	+ +	—
4	19/5	4 y.	62	2,150,000	1·44	3000	44	8·0	47	1·0	2 normo.	+ +	+ +
5	16/11	5 y.	23·8	1,100,000	1·08	4000	36	5·0	59	—	3 megalo. 1 normo. 1 micro.	+ +	+ + +
6	7/12	8 m.	78·5	4,000,000	0·98	6000	33	3·0	64	—	1 normo.	+ +	+ +
7	14/12	8 m.	94·6	3,730,000	1·3	6000	37	2·8	60	0·2	1 ,,	+ +	+
8	17/12	3 y.	92·8	3,500,000	1·3	6000	48·4	3·6	42·6	5·4	2 megalo.	+ +	+
9	25/6	5 y.	75·5	2,920,000	1·3	4800	56	8·0	34	2·0	2 ,,	+ + +	+ +
10	13/10	6 m.	30·0	1,100,000	1·4	4000	50	1·0	49	—	1 ,,	+ +	+ +
11	21/10	8 m.	15·0	1,000,000	0·75	3400	79	—	21	—	2 ,,	+ + +	+ + +
12	25/5	7 m.	66·5	2,470,000	1·4	5000	49	4·0	45	2·0	Nil.	+ + +	+ +

m. = Months. y. = Years.

Remarks.—CASE 2. Patient had slight ankylostomiasis. CASES 10 and 11. Hæmoglobin estimated by Talquist's scale. Died a few days later.

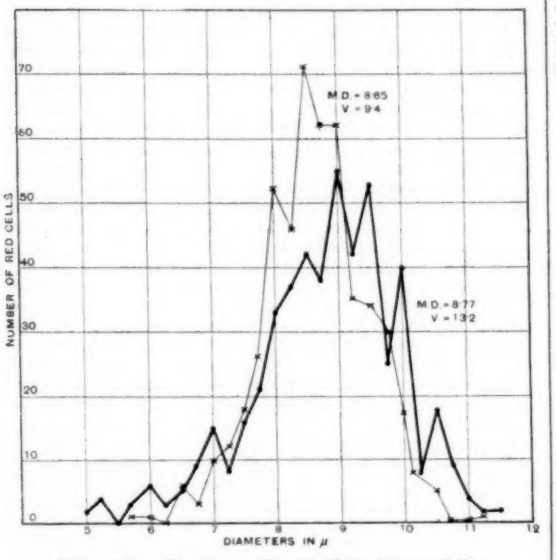
profound when a figure below 1·0 is found. Leucopenia to a greater or less extent seems to be a very common feature of sprue anæmia, and this decrease in the white cells seems to run more or less pari passu with the decrease in the red cells. Relative lymphocytosis appears to be a common feature in sprue anæmia as in Addisonian anæmia.

Progress of the Anæmia.

The course of the anæmia appears to depend on the response to treatment of the sprue condition. If by suitable dietetic measures the alimentary disturbance is improved, so the degree of anæmia will be

In the chart of this case two curves are superimposed. The one was made when the red cell count was 2,600,000 per c.mm. and the second when this had risen to 4,100,000. It will be seen that a definite change in the character of the chart has taken place, a "shift to the left" of the highest peak having occurred, whilst the base has contracted somewhat and the whole curve becomes more regular.

FIG. 3.



M.D. = Mean diameter. V. = Coefficient of variation.

Hurst [24] states that the characteristic curve of Addisonian anæmia is seen in that disease even before the patient is markedly anæmic and also during remissions, and in the figure he publishes (from Shackle and Hampson [29]) in which two curves from the same patient at intervals are shown, in both instances the curves have the characteristic irregular outline and broad base. It would appear, therefore, that although in the anæmia of sprue the Price-Jones curves obtained in the severer cases approximate to those seen in cases of Addisonian anæmia the degree of variation in size of the red cells in the former disease is not spread over so wide a range, and the base of the curve tends therefore to be somewhat more restricted than in the latter condition.

Cholesterol Content of Blood.

It has been noted by several observers, notably Bloor,[26] Myers,[3] Pacini,[28] &c., that the cholesterol content of the blood is distinctly lowered in cases of anæmia, and various analyses have been made of the cholesterol content of the blood in Addisonian anæmia, but we have not come across any similar figures for the anæmia accompanying many cases of sprue.

It was considered worth while, therefore, to carry out a series of analyses on some of our cases of sprue, and the results are appended in the accompanying Table II.

There appears to be some divergence of opinion as to the cholesterol content of normal blood. Myers [29] gives it at about 0·160–0·180 per cent., whilst Bloor [30] gives somewhat higher figures. In an investigation of the cholesterol content of the blood of seven healthy adult men which we carried out, we found that the figures for the cholesterol content of the plasma varied between 0·290 and 0·140 per cent., giving an average of 0·192 per cent., whilst for the washed corpuscles the figures varied between 0·155 and 0·122 per cent. with an average of 0·140 per cent. Grigaut,[31] in an analysis of the blood of four normal individuals, gives an average of 0·171 per cent. for plasma and 0·140 per cent. for corpuscles. In all our investigations on the cholesterol content of blood Myer's method of chloroform extraction with subsequent Lieberman-Burchard colour development and estimation by the colorimeter was employed.

We have in all carried out cholesterol estimations in 11 of our cases of sprue anæmia (Table II.).

It will be seen that in all the cases of anæmia accompanying sprue there is a definite hypocholesterolæmia, especially well marked in several cases, and that the degree of such hypocholesterolæmia seems to bear little or no relationship to the degree of anæmia present. Myers, in an analysis of two cases of Addisonian anæmia by his method, gives figures of

TABLE II.

Case.	Red cells per c.mm.	Hæmoglobin per cent.	Cholesterol.	
			Plasma per cent.	Corpuscles per cent.
1	1,620,000	40·7	0·150	0·113
2	3,900,000	86·0	0·177	0·044
3	3,700,000	85·6	0·060	0·066
4	2,150,000	62·0	0·116	0·136
5	1,100,000	24·0	0·037	0·150
6	4,000,000	78·5	0·153	0·125
7	3,730,000	94·6	0·093	0·103
8	3,500,000	92·8	0·066	0·065
9	2,920,000	75·0	0·160	0·144
12	2,470,000	66·5	0·136	0·113

0·065 and 0·065 for plasma and 0·12 and 0·13 for washed corpuscles. It is thus apparent that no distinction can be drawn between Addisonian anæmia and the anæmia of sprue based on cholesterol content of the blood.

Blood Group.

Hunter,[32] in his observations on 42 cases of Addisonian anæmia under his care, investigated the blood groups of 38 of his patients and found that of these individuals 34 belonged to Type II., 3 were of Type IV., and 1 of Type III. These figures are according to the Moss classification and show a marked predominance of Type II. individuals, but whether or no any significance should be attached to this large number of Type II. cases was not determined. In 9 of our cases of sprue the blood group was determined; 6 of these (4 men and 2 women) came under Group IV., 1 male belonged to Group I., 1 female to Group II., and 1 man to Group III. The great majority of our cases, therefore, came under Group IV. but the total number of cases is much too small to warrant any deductions being drawn.

Van den Bergh's Reaction.

It is generally conceded that in the acute cases of Addisonian anæmia the application of Van den Bergh's reaction to the blood serum almost invariably gives a positive indirect reaction, but that in the well-marked remissions in this disease this reaction may become very poorly marked or even disappear, to reappear on the occurrence of a relapse. In 7 of our cases of sprue (3 men and 4 women) this reaction was carried out, and all but one showed a positive indirect reaction. The strength of the reaction seemed to depend on the degree of anæmia present, those cases with a very marked degree of anæmia giving a well-marked reaction, whilst those with only a moderate loss of red cells only displayed a very feeble reaction. It would appear, therefore, that the anæmia of sprue follows closely in this respect the behaviour of Addisonian anæmia blood.

Conclusions.

1. Sprue and Addisonian anæmia are two distinct clinical entities; though having several features in common, we think they are produced by two definite and distinct ætiological agents.

2. Sprue is definitely a disease of the tropics, in some way connected with the exposure of susceptible individuals to a condition, or conditions, inseparable from life in a tropical climate; but it is probable that these conditions are more effective in some tropical countries than in others, and in some such manner we may explain the absence of indigenous sprue from Central Africa. Addisonian anæmia, on the other hand, has a cosmopolitan distribution.

3. The typical anæmia which accompanies these two diseases is almost identical, but this feature alone does not indicate a similar, or even allied, ætiology.

4. Addisonian anæmia is generally a fatal disease, though it may run a prolonged course; sprue is by no means so. That in the latter absolute recovery can ensue is a matter of common knowledge. The facts assembled in this paper suggest to us: (*a*) That the sprue anæmia is secondary to the gastro-intestinal lesions. (*b*) In Addisonian anæmia, the anæmia is due to disease of the blood-forming organs so that recovery is not dependent on the processes of digestion and assimilation; the glossitis and gastro-intestinal symptoms appear to be secondary to, or to follow on, the primary anæmia. (*c*) In sprue assimilation of food is fundamentally affected, with the production of great emaciation and loss of body-fat in which all organs, especially the liver, take part and which is dependent upon, and associated with, the excretion of one-quarter (it may be) of the food taken by the mouth; consequently, the excretion of large, fatty, and colourless stools constitute a feature which is pathognomonic of sprue. (*d*) In Addisonian anæmia assimilation of food is not affected to the same degree, emaciation is, therefore, not a feature; an increase of body-fat may actually accrue, there is no wasting of the internal organs; the stools are of normal size and appear to contain the normal amount of pigment. (*e*) The toxin of Addisonian anæmia has a most definite selective action upon the peripheral nerves and central nervous system, with the production of neuritis and of spinal sclerosis, features which, in our experience, are not found associated with the anæmia of sprue.

We desire to tender our grateful thanks to Dr. G. C. Low for permission to study the records of his cases and for facilities granted to investigate the blood of patients under his care in the Hospital for Tropical Diseases.

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ELONGATION OF THE PELVIC COLON AND ITS SURGICAL TREATMENT.

BY E. G. SLESINGER, O.B.E., M.S. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON, GUY'S HOSPITAL.

THE pelvic colon varies in length between considerable limits in perfectly healthy individuals, and is relatively much longer in the infant than in the adult. The following remarks are therefore not intended to suggest that elongation of the pelvic colon necessarily results in the production of symptoms, but rather to point out that in certain cases such elongation produces results sufficiently severe to call for relief, and to indicate an operative procedure which, in the four cases cited, has been followed by satisfactory results. It would seem probable that this measure is indicated in a considerable proportion of cases of constipation of a certain type or, at any rate, deserves consideration as an alternative to prolonged and not invariably successful medical treatment.

In the normal individual the rectum does not ordinarily contain fæces, which are prevented from entering it partly by the tonicity of the pelvi-rectal sphincter and partly, or perhaps mainly, by the angulation between the pelvic colon and the rectum—the pelvi-rectal flexure. As the pelvic colon fills with fæces, which it does from below upwards, it rises into the abdomen and straightens out the pelvi-rectal flexure, allowing fæces to enter the first part of the rectum and so setting in train the defæcation reflex.

It appears probable that in cases where the pelvic colon is elongated, either as a congenital abnormality or as a result of prolonged constipation of a type to be presently discussed, as fæcal material accumulates in this coil of bowel it no longer straightens out the pelvi-rectal flexure, partly because of its length, and partly because, being seldom completely evacuated, fæces no longer accumulate from the distal end. Efforts to evacuate this loaded loop will tend to increase the flexure by driving the pelvic colon farther into the pelvis, with consequent increasing constipation.

Sir Arbuthnot Lane has for many years pointed out that the normal reaction of the body to the presence of a constipated, loaded colon is the development of avascular bands on the surface of the outer side of the mesentery, whose function it is to support the loaded portion of the intestine and to take the strain off the sensitive mesentery. The first situation in which such bands develop is on the outer side of the iliac and pelvic colons, and in the first instance their function is beneficial. They are a reaction to the assumption of the erect posture, and prevent the constipated pelvic colon from prolapsing into the pelvis. Over-development of these bands is, however, exceedingly common, and if this occurs they become attached to the bowel at its anti-mesenteric border, and, by producing torsion in its long axis, lead to obstruction to the passage of its contents.

"*The Last Kink.*"

Under these conditions Lane has termed the pelvic bands the "last kink." In the presence of a well-developed "last kink" it is unusual, as one would expect, to find a very long pelvic colon, since the presence of the "kink" prevents the elongation of the bowel. In certain cases, however, where the "last kink" is not well developed, and in some in which it has not formed at all, the stagnation of fæces in the pelvic colon results in marked elongation of this part of the bowel. The more it becomes elongated the greater is the difficulty in emptying it, and a vicious circle results. In these cases, and in the far less common ones in which the pelvic colon is congenitally elongated, it appears a rational procedure to remove the redundant bowel and to restore the colon to its normal condition, in which there is only a small reservoir between the iliac colon and the rectum. By this means the pelvi-rectal flexure becomes readily opened out, since there

is no longer a loaded loop to be forced into the pelvis, and at the same time the general systemic effects of the accumulation of fæces are overcome. After the operation it is well to attach the fascia of the outer side of the posterior abdominal wall to the mesentery in imitation of Nature's "last kink" to prevent subsequent strain upon it. The operation that has been done is to expose the pelvic colon through a left paramedian incision and, having estimated the length of bowel to be removed, to resect it between clamps, placing the clamps obliquely, sloping from the mesenteric border away from each other in order to provide a wider surface for the junction.

An end-to-end union is then made and the hole in the mesentery is repaired. A Lane's colectomy tube, which is a large œsophageal tube with terminal and lateral eyes, is passed up the rectum by an assistant and is manipulated by the operator through the junction until its end is well up in the descending colon. The tube is fixed by a stitch at the anus and, by preventing tension at the suture line for the first five or six days, adds very greatly to the safety of the operation. If there is no development of the "last kink," a broad strip of fascia may be attached to the outer side of the mesentery proximal to the bowel to support it.

There appears to be no tendency to stricture after this operation, even in young children, and in one child X rays taken three years after operation showed no sign of the anastomosis.

Four Cases Related.

CASE 1.—F. S. W., female, aged 7½, was seen on March 11th, 1921, with a history of continuous medical treatment under many physicians for the previous four years for "abdominal attacks." On inquiry it appeared that she was always constipated, but that the constipation was much more obstinate at times. During these exacerbations she had pyrexia and headache and suffered from severe attacks of urticaria and asthma. On three occasions she had had bleeding from the bowel. The stools are foul, frothy, and undigested between the attacks, and after them are very hard. During the attacks enemata are often without result, and the child states that she feels "something move inside" when she is at last able to have an evacuation.

X ray examination by Dr. N. Mutch showed the cæcum, ascending, transverse, and descending colons to be normal; the pelvic colon was very dilated and elongated, forming a loop reaching well above the umbilicus. There was a controlling appendix. On March 30th the appendix was removed and the redundant pelvic colon was resected, a tube being passed up through the anastomosis and left in for five days. Copious liquid paraffin was given to keep the motion fluid. The child left the nursing home on the twenty-first day with her bowels acting daily without purges.

Dr. Greenwood, of Ripon, who is now her doctor, has kindly allowed me to quote his letter:—"The child has only occasionally complained of a transient pain in the umbilical region, relieved by a hot-water bottle or a dose of paraffin. She has a daily action of the bowels without any difficulty, taking liquid paraffin if there is any tendency to constipation, which seldom occurs. She has no pyrexia, urticaria, or asthma, and is normal in weight and size. Mentally she is alert and normal, though somewhat childish for her age. Her headmistress says that her age is mentally 11 (actual age 12½)."

CASE 2.—P. K., male, aged 7, seen in November, 1922, with Dr. L. Mandel, under whose care he had been for some time. He complained of pains in the stomach, legs and feet, and constipation, which was more severe than usual at times and was associated with considerable pyrexia and with attacks of urticaria, especially of the face. He had previously been in one hospital with a diagnosis of ? Hirschsprung's disease, ? diverticulitis; at another hospital it was suggested that he might have a serous exudate into his bowel, in association with the urticaria, giving symptoms of intestinal obstruction. He was very backward for his age and undergrown. Dr. Mandel treated him medically for eighteen months with repeated enemata and wash-outs of various kinds without improvement. He was given paraffin, phenolphthalein and numerous purgatives, and a course of thyroid and pituitary extracts with no result. X ray examination showed some delay in emptying the cæcum and marked elongation of the pelvic colon.

All other measures having failed, it was decided, after consultation, to explore the abdomen. The pelvic colon was found extremely long and thickened, and the redundant portion was excised with end-to-end union. A tube was passed up the rectum and through the anastomosis. Recovery was uneventful. The patient has had no further attacks of pyrexia and urticaria and usually his bowels are opened daily with a small dose of liquid paraffin. About one year after operation he had one attack of constipation, but without pyrexia, which yielded to enemata given daily for a few days. Otherwise he has remained perfectly well, and mentally and physically he is now a normal child for his age.

The urticaria, asthma, and pyrexia in the first case, and the urticaria and pyrexia in the second would appear to be anaphylactic phenomena associated with the retention of fæces, and cleared up with remarkable rapidity after excision of the long pelvic colon and the abolition of the consequent stagnation of intestinal contents.

CASE 3.—E. B., female, aged 39, a nurse, was under the care of Dr. N. Mutch, and gave the following history. Two years previously she had had an attack of acute obstruction, which was relieved without operation. A year later she had severe attacks of abdominal pain with vomiting and the passage of blood and mucus per rectum. She also had great abdominal distension after taking any solid food. She was operated on for "adhesions" in the spring of 1923. This improved her for a few months, after which her symptoms returned. On admission she had continual aching pain in the abdomen with severe attacks at times. She passed very little blood and an occasional mucus cast. Her bowels had not acted without enemata for some months. Tenderness in the abdomen was most marked in the left iliac fossa. X ray examination showed the pelvic colon to be very much elongated and thrown into a large loop. While in hospital it was found impossible to discontinue the daily wash-outs without pain and distension following. She passed casts while in hospital of from 1 to 3 feet in length.

On June 26th, 1924, the abdomen was opened through a left paramedian incision, and the pelvic colon was found to be greatly elongated. About 8 inches of redundant bowel was removed and an end-to-end anastomosis was made. A tube was passed up the rectum through the junction.

She left hospital in a month free from pain and with the bowels acting normally. Early in 1925 this patient had acute abdominal pain in the region of the incision, and was re-operated on, adhesions to the scar being freed. This relieved her at once, and since then she has remained well with the bowels acting normally.

CASE 4.—H. M. R., male, aged 38, was admitted with abdominal pain. Ten years ago he had a first attack of severe constipation, associated with abdominal pain, which was worse after food, and vomiting. This condition recurred at intervals, with intervals of freedom from symptoms. Nine months ago he began to have severe colicky pains limited to the left iliac fossa and associated with complete constipation. This type of trouble has been occurring at intervals ever since. There has been no hæmatemesis or melæna. He has lost 6 lb. in weight in the last nine months. X ray examination with a barium enema showed marked elongation of the pelvic colon, but no evidence of dilatation or obstruction.

The abdomen was explored on Jan. 29th, 1926, the possibility of malignant disease of the colon being seriously entertained. There was no growth, and no evidence of any gastric or duodenal ulcer. The pelvic colon was much elongated, and the redundant portion, 10 inches, was removed with subsequent end-to-end anastomosis. A tube was passed up the rectum through the anastomosis. The patient left hospital on the eighteenth day, with the bowels acting normally and quite free from pain, and he has remained so since.

Conclusions.

Elongation of the pelvic colon would appear to be the determining factor of a group of somewhat severe symptoms in certain cases. In the two children (Cases 1 and 2) the picture in each case is sufficiently similar to suggest a definite syndrome, the association of constipation occurring in attacks, and accompanied by pyrexia, with urticaria and other anaphylactic phenomena, being very striking. X ray evidence of elongation of the pelvic colon in such cases should bring the question of operation under consideration, since in both these cases prolonged medical treatment in expert hands had completely failed

Resection of the redundant pelvic colon does not appear to be associated with any considerable risk, provided a large tube is passed through the anastomosis and left in place for five days.

The results of this operation in the four cases in which it has so far been performed have been satisfactory.

*** Since the above was written the operation has been performed in a further adult case with satisfactory results.

OBSERVATIONS ON CLIMATIC BUBO.

BY H. M. HANSCHELL, *D.S.C.*, L.R.C.P., M.R.C.S., D.T.M. & HY. CAMB.,
HON. MED. SUPT. AND M.O. IN CHARGE V.D. CLINIC, SEAMEN'S HOSPITAL, ROYAL ALBERT DOCK, LONDON.

AMONG the seafarers of every nationality, race, religion, and colour who seek treatment at the Seamen's Hospital, "climatic bubo" is not a very rare complaint. This note embodies the writer's observation of the condition in the West Indies and tropical Africa, and in patients at the hospital since January, 1919. The disease has not yet been reported in women.

Diagnosis.

Diagnosis depends on :—

1. Inguinal adenitis and periadenitis.

2. Absence of known more or less common lesions about the genital and anal area, such as primary syphilitic and chancroid ulcers, purulent balanitis, pediculosis, scabies, gonorrhœa, herpes genitalis, granuloma pudendi, and filariasis. It must be remembered that inguinal adenitis may follow on chancroid ulcers, or a primary syphiloma, several weeks after these latter have healed; the blood should therefore be tested for Wassermann reaction. A critical inspection of the genital apparatus and area, and the anal area, is necessary. In two cases of climatic bubo where infection had apparently been acquired in coitus, respectively three and four weeks previously, I observed, besides some subacute balanitis, a few pin-head size shallow ulcers in the post-coronal sulcus of the glans penis. These had healed completely 24 hours after swabbing with methylated (90 per cent.) spirit.

3. *Fever.*—This may be absent when the case is first seen; it may develop later, or a history of past fever may be obtainable. In all my cases it has been present at some stage of the disease. Quite a small degree of adenitis and periadenitis, with no reddening of skin, may be accompanied by protracted irregular fever, though the temperature rarely reaches 103° F.

4. A *history* indicating that the condition has developed after coitus in tropics or sub-tropics.

One of my patients was a European seafarer, aged 17 years, with climatic bubo. Although he had voyaged East, he denied any coitus at all. It is possible, and not unlikely, that he spoke truth. Climatic bubo, like the other venereal diseases, may possibly be acquired otherwise than in copula. Nor, also, is the disease exclusively tropical. Another patient, with fever and inguinal adenitis and periadenitis, absence of scars or lesions other than a mild patchy balanitis, and with a negative blood W.R., denied any coitus during the previous 18 months except for one five weeks previously in Marseilles, which city marked his nearest and only approach to the tropics. Still another patient, in whom climatic bubo was diagnosed on the grounds given above, had not been out of England at all. The disease is climatic in the sense of being far more common in warm climates, and the designation "climatic" makes so socially convenient a cover for venereal bubo that it is likely to be retained and even extended. It has already replaced "pestis minor."

Circumcision.—I have not yet observed the disease in the circumcised. The literature on the subject is silent on this point. Among the patients attending the V.D. clinic of the Seamen's Hospital are many Indian "lascars." They are all Mahommedan and circumcised, with a genital area clean shaven. They show their due proportion of inguinal buboes following chancroids or scabies of the genital area. None has yet been found with climatic bubo. In contrast, climatic bubo has been seen not rarely in the prepuce-bearing European, Chinaman, and negro; and in the uncircumcised Christian Indian, who provides a very small quota among the Indian seafarers treated at the hospital. French observers in North Africa report the condition as one peculiar to the European. Presumably the indigenous population is Mahommedan and Jew, and therefore circumcised.

Organisms.—I have detected no organisms by microscopic examination in the juice aspirated from unincised or unbroken inguinal glands; nor in sections of these glands have I found any organisms or any constant histological differences distinguishing the morbid changes from those seen in the inflamed glands resulting from scabies of the genital area, or ulcus molle.

Treatment.

In all cases the patient should be put to bed, whether fever be present or not. Incision of the lesion leads inevitably to secondary infection with pyogenic organisms, to more incisions, and a great prolongation of the illness and incapacity. If glands are excised, the large gape left in the groin becomes secondarily infected, and takes many weeks to heal.

It is usually found that all the glands (not only the superficial group) are affected and thorough surgery therefore tries to extirpate them all. One possible, and undesirable, result of this is shown by the following experience. I had myself practised incision and excision until January, 1919, when I was shown by Dr. G. C. Low a male European with elephantiasis of penis and one leg, and a splendid scar in each groin. The elephantiasis had gradually developed during three years following surgical operation for climatic buboes in both groins. At that time I had under my care a case of gonococcal urethritis and arthritis, with tender inguinal adenitis. Intravenous injection of killed typhoid bacilli (in this case for the arthritis) had been followed by rapid disappearance of the inguinal adenitis.

With this last case, and the picture of elephantiasis, fresh in mind, when a case of climatic bubo came under my care a few days later it was treated by intravenous injection of killed typhoid bacilli with the prompt vanishing of fever and quick decrease of the inguinal adenitis. Since that date I have used this treatment in all cases of climatic bubo (and in many cases of ulcus molle buboes) with unfailing good results. After the patient has been put to bed the glans penis and preputial sac should be thoroughly swabbed with methylated (90 per cent.) spirit. One such cleansing is sufficient to cure the mild degree of balanitis I have always found to be present. Some of the cases have already suffered incision of the inguinal nodes or these have ruptured through the skin. In consequence, secondary pyogenic infection has occurred. All undermined overhanging inflamed skin should be cut away flush with the surrounding skin under local anæsthesia, and wet eusol dressings applied. In these cases also, suppurating tracks debouching on to the surface should be laid open freely, the skin over them cut away, and wet eusol dressings applied. No glands need ever be incised or excised. If the skin be intact and fluctuation denote presence of pus in probable quantity of one drachm or more, *sterile* aspiration may be carried out—the puncture being sterilely sealed after evacuation. If necessary, aspiration is repeated. Where pus is suspected and rupture through the skin appears possible, the whole area should be sterilised with tincture of iodine and covered with sterile gauze. No other surgical procedure is necessary. If no pus be detected, the groins are covered with sterile gauze, over which thermogene wool is lightly bandaged. The patient is then given an intravenous injection of killed typhoid bacilli, or a mixture of killed typhoid, paratyphoid A and B, bacilli, whether fever be present or no. It has proved safe and effective to begin with 100 million bacilli. This dose is followed in one or two hours' time by a rigor and rise of temperature to, it may be, 104° F. Where fever is already present there is a rise of not more than 1½ to 2 degrees. In a few hours the temperature falls to normal, or below, with sweating. In many cases this ends the illness. There is no return of fever and the lesions in the groins rapidly subside. If the patient be allowed up too soon there may be increase again of adenitis. But it is rare for it to be necessary to keep the patient in bed longer than 14 days. In some cases, however, the injection may have to be repeated in four or five

days' time, and even a third time, with increasing doses, 150 million and 300 million. I have not yet seen a case require more than three injections. This treatment has converted what was very often a long, painful incapacitating illness, troublesome to the medical attendant, into a comparatively simple illness of one to three weeks' duration.

My own experience has been entirely confirmed by the subsequent experience of Dr. G. C. Low and Dr. P. H. Manson-Bahr at the Hospital for Tropical Diseases in London.

THE INTELLIGENCE OF CRIMINALS.

BY H. A. GRIERSON, M.B., B.S. LOND.,
AND
C. H. L. RIXON, M.D., M.R.C.S., L.R.C.P., D.P.M.,
MEDICAL OFFICERS, H.M. PRISON, BRIXTON.

OBSERVATIONS on the intelligence of criminals have been made from time to time in various countries, but as far as the writers are aware no statistical information on the subject has hitherto been collected in this country. The medical officers of English prisons make mental examinations of a large number of prisoners every year, but it must be remembered that in the vast majority of those cases the examination is made because there is some ground for suspecting that the prisoner is mentally abnormal. Indeed, several hundred prisoners are remanded to this prison every year from the police courts of the metropolis solely in order that such an examination may be made before trial. Other observers have given valuable statistics concerning the insane and mentally deficient who, at remand prisons, are thus constantly being weeded out before trial. These records, however, give no information concerning those who are not thus eliminated, and it is in the endeavour to estimate the intelligence of those who arouse no suspicion as to their mental equipment—i.e., the ordinary prisoner—that this study has been undertaken.

For this purpose we have estimated the intelligence of 200 male prisoners, concerning each of whom we have also obtained information upon a number of other matters. Since some method of selecting the subjects was necessary, the plan was adopted of taking the owner of the bottom name on each page of the Reception Register, in which the name of every man is entered at the time of his reception into prison. It was thought advisable to exclude from the investigation prisoners committed for contempt of court, as these can hardly be considered in the same class as criminals. It was foreseen that difficulty might arise from the inclusion of elderly prisoners, since the estimation of their intelligence is complicated by premature senile changes, which are apt to occur somewhat earlier in the class from which the majority of prisoners are recruited than it is in the higher social strata. The effects of alcoholism and syphilis are also liable to upset calculations. For these reasons it was thought wise not to include prisoners over 35 years of age. If, therefore, the bottom name on any page of the Reception Register was that of a prisoner who had beeen committed for contempt of court, or was over 35 years of age, or had been remanded for mental examination, the name above was taken.

From each one of the prisoners thus selected a number of particulars were obtained, and his intelligence was then estimated by the Terman scale.

The average mental age of the 200 prisoners was exactly 14 years, the individual mental ages being spread over a fairly wide range. At the lowest end of the scale was a prisoner, charged with a trifling offence, whose mental age was only 5–6 years. He was actually 32 years old according to his own statements, but these were quite unreliable, and he had no relatives or friends who could give information about him. He gave a history of having reached Standard II. at school when 14 years old. He made a precarious living by buying and selling small quantities of flowers, and his condition, although doubtless congenital, had probably been aggravated by privation, as he was seldom able to afford accommodation in lodging-houses or a sufficiency of food. He was extremely thin, and weighed only 7½ stone. Although this prisoner was not remanded for the purpose of mental examination, it was obviously right to inform the court of his condition. This was done, and upon his reappearance there he was certified under the Mental Deficiency Act.

At the other end of the scale were four prisoners, each of whom had a mental age of 19½ years—the highest that can be scored on the Terman scale—and they were plainly men of high mental ability. One, charged with burglary, was acquitted; but, as he had already been convicted of burglary on two previous occasions, his predilections were evidently similar to those of the other three, who were severally convicted of stealing machinery, of breaking into a church and stealing, and of being a suspected person. Between these extremes all gradations of intelligence were found.

Of the 200 prisoners examined, 181 were convicted. One was found to be insane, and upon his reappearance at court was accordingly discharged to the Poor-law infirmary; one, as mentioned above, was found to be mentally deficient, and was certified as such; and 17 were acquitted. The fact of acquittal must not, however, be regarded as evidence of a blameless past, for of the 17 so dealt with eight shared between them no less than 29 former convictions, so that these may fairly be considered to represent a similar class of persons to the 181 who were sentenced.

Average mental ages associated with the various kinds of crime.

Crimes.	Years and months.	Incidence of the different kinds of crime in 200 cases.
Fraud, False pretences, Forgery	15/2	17
Breaking and entering, Burglary	14/5	32
Receiving, Stealing	14/1	93
Crimes of violence	14	17
Suspected persons	13/10	22
Rape and sexual offences	12/4	8
Miscellaneous	13/3	11

The numbers examined are too small to warrant any hard-and-fast conclusions, but it is interesting to observe the relatively high intelligence displayed by the fraud and forgery group.

The examination of these cases has again illustrated two points which are familiar to all who make frequent use of mental tests. The first of these is that the standard of scholastic attainment is worthless as a guide to intelligence. Thus, a youth charged with stealing jewellery had only reached Standard III. at school, but his mental age was $14^{5}/_{12}$ years. Another, charged with rape, who had been in Standard ex-VII., had a mental age of 12. Both were subsequently convicted.

The second point is the close correlation between the estimation of the intelligence by the vocabulary test alone with that obtained by using the entire series of tests. The average mental age of the whole series, measured by either of the methods, is exactly 14.

Probably the most interesting figure which emerges from this study is the average mental age of 14 years. No statistics are available, as far as we are aware, of the average mental age of the population as a whole; it would probably prove to be no higher than this, and many competent observers think it would be lower.

The view that a man who takes to crime is, by that fact, to be adjudged intellectually inferior to the righteous receives no support from these figures. On the contrary they confirm the view generally held by those who have had experience of the criminal, that his intelligence is in no way below that of the "man in the street." He is "the man in the street."

This paper is published by permission of H.M. Prison Commissioners, but it must not be taken as necessarily representing their views.

Clinical and Laboratory Notes.

CARCINOMA CUTIS.

MULTIPLE SKIN CANCERS OF OCCUPATIONAL ORIGIN.

BY W. J. O'DONOVAN, M.D., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN, SKIN DEPARTMENT, LONDON HOSPITAL.

THE patient who is the subject of this report first attended the London Hospital in 1918, and has been under continuous observation since that date.

History of the Case.

The patient is now (1926) aged 55. He states that he has worked as a gunsmith for 39 years, and throughout this time he has always done the same class of work—i.e., examining the component parts of old and rusty rifles and reconditioning them; and in so doing has handled a vice, files, scrapers, and gauges. Iron dust and rust is scattered on to his hands, face, and neck; in his work his clothes become oily all over, even to his shirt. The chief oils used are Rangoon oil, paraffin oil, and some vaseline, but mostly the first. From time to time he has suggested that his trouble might be due to this work, but has no knowledge of any fellow employee similarly affected.

In 1914 a particle of steel entered his right eye, and it has been blind since. He was treated for this at Moorfields and states that a small tumour near the eye was excised at this time. In 1918 a "pimple" appeared at the end of his nose, and he was admitted for this into the London Hospital under Mr. Souttar. About this time he noticed lumps appearing on his skin, at first on his right forearm, then on his right leg, then the left arm, and lastly both ears became implicated.

FIG. 1.

"Oil" carcinoma of ear.

In May, 1923, he was referred to Dr. J. H. Sequeira with a large ulcerated bulbous painful swelling on the tip of his nose. The Wassermann was negative, a portion of the growth was removed for microscopical examination, and the pathological report upon it on June 19th, 1923, was: "The tumour is a growth of squamous and horny epithelium, the bulk of the epithelial processes having a central cavity lined or filled with horn and so resembling hair follicles. The processes are usually well defined by a basal layer, and there is no definite histological evidence of malignancy. The growth is, however, so luxuriant, passing deeper into the dermis than the limits of the excision, that it would be advisable to treat it as definitely carcinomatous."

On June 24th, 1923, the growth then being the size of half a crown, he was readmitted and the whole of the growth, with the anterior portion of the nose, was removed by Mr Perry. The pathological report after the operation was "squamous-celled and horny carcinoma of skin of nose." He was provided with an artificial nose Dec. 19th, 1923.

Condition on Readmission in 1925.

The patient reattended the skin department March 5th, 1925, with multiple cutaneous nodules about 1 cm. in diameter on both arms. As he had been taking medicine for a chronic cough the possibility of an iodide eruption was first excluded. In August, 1925, a new nodule was noted on the left thigh, and by December, 1925, nodules had appeared on the left ear, forearm, leg, and groins. A nodule excised on Feb. 11th, 1926, was submitted to microscopical examination, and the report was "Focal acute purulent and subacute inflammation in squamous and horny carcinoma of skin of inner surface of left thigh." In April of this year a nodule was removed from the right forearm, and the pathological report was "Squamous and horny carcinoma."

FIG. 2.

"Oil" carcinomatous ulcers on right leg.

In all the patient is certain that 15 separate tumours have been removed from the neck, chin, cheek, thigh, nose, forearm, and chest respectively. He is a blonde of medium height with no signs of visceral disease and at present no adenopathy. On the left ear is an ulcerated tumour 2 cm. in diameter with a raised rolled edge (Fig. 1). There is a smaller similar infiltrated ulcer on the antihelix of the right ear. There are two similar 2 cm. neoplastic ulcers on the right leg (Fig. 2) and one on the outer aspect of the left arm, one on the right forearm, and three on the scrotum, two of which are pedunculated and one sessile. There are many comedones in the skin behind both ears; the patient presents no general nor local pigmentary changes.

Comment.

Multiple squamous-celled cutaneous carcinomata are much rarer than are multiple rodent ulcers. No similar case has been reported in London, nor has any such case been seen previously at the London Hospital. One would have much hesitation in ascribing to this disease an occupational origin were it not for a report [1] of the Departmental Committee appointed to consider evidence as to the occurrence of epitheliomatous ulceration among mule-spinners, published by the Home Office in February, 1926.

I have published groups of cases of squamous-celled carcinomata due to other occupational hazards: anthracine,[1] tar,[2] and arsenic,[3] in previous issues of the *British Journal of Dermatology and Syphilis*. By analogy with these other proved and accepted cases of multiple industrial carcinomata, there seems an inherent probability that this case had also an industrial external cause, but before issuing any certificate to this effect both Dr. J. H. Sequeira and myself felt that this case should be shown before our colleagues at the Dermatological Section of the Royal Society of Medicine.

In Dr. S. A. Henry's report [4] credit is given to Mr. S. R. Wilson and Mr. A. H. Southam [5] for calling attention to the occurrence of occupational carcinomata in cotton-mills. The Committee were able to trace up to the date of their report 539 cases. "The age-period at which the cotton-spinners' disease appears to be specially liable to manifest itself reaches its maximum about 55." (The age of the present case.) In cotton-spinners, as in tar and arsenic workers, the disease does not usually occur until the person

affected has been employed for a considerable time. Mineral oils are held responsible and "the average duration of employment for all cases was approximately 40 years." (The present patient has been employed for 39 years.) A wide distribution of growths was noted in mule-spinners as in this case. Dr. Alex. Scott has reported [6] many cases of industrial skin cancer amongst the employees in the Scottish shale oil industry. Other cases of scrotal carcinoma apparently due to work in oil have been recorded by foreign writers—Derville and Guermonprez [7] and Erlich.[8] In cotton-spinners (as in the present case) oil reaches the clothing of the workers, more particularly in the region of the groins, and the report draws attention to the practice of placing oil waste or even an oil-can in the trousers pocket.

It seems proper, then, to report this case as a new industrial hazard due to oil handled outside a refinery and analogous to the cancers found in "mule-spinners," tar-workers, patent fuel manufacturers, paraffin-workers, chimney-sweeps, and arsenical dip manufacturers.

Summary.

1. A case is reported of multiple cutaneous skin carcinomata. 2. The scrotum, face, limbs, and chest are sites of incidence. 3. So far local excision has sufficed, but new growths are appearing. 4. The patient has been employed in contact with mineral oil for 39 years. 5. The nature of the tumours has been demonstrated microscopically four times. 6. Arguments are adduced to establish the occupational cause of this disease. 7. Epitheliomatous ulceration due to mineral oil contracted in a factory or workshop is a notifiable disease by a Home Office Order of Nov. 28th, 1919.

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A CASE OF
ACUTE DILATATION OF THE STOMACH
WITH AORTIC SUCCUSSION HEARD AT A DISTANCE OF TWELVE FEET.

BY N. W. SNELL, M.B., B.S., M.R.C.P. LOND.,
AND
L. H. SAVIN, M.R.C.S. ENG.,
ASSISTANT MEDICAL OFFICERS TO ST. MARYLEBONE HOSPITAL, W.

ON account of the rarity of the symptom observed in the following case we have thought it well to record it.

On Jan. 16th, 1926, at 8.30 P.M., one of us (L. H. S.) was called to admit a patient suffering from severe vomiting and abdominal pain. Arriving at the receiving ward a series of loud splashing noises was heard, which proceeded from the patient. The patient was a spare man of 33, with dark hollows under the eyes and blackish vomit running down a three days' growth of beard. He looked extremely ill. Going up to him an attempt was made to get his history, but the splashing noise made this difficult. It was even said: "Can't you stop shaking that hot-water bottle and describe your symptoms?" "I cannot stop, sir," he replied. "The noise is in my inside and has been going on all day." He complained of a slight cough and pains in the stomach unrelated to food, off and on since January, 1925, and these symptoms had been worse for the last four days (since Jan. 12th, 1926). He had had occasional attacks of vomiting for some months, and this was extremely severe on the day of admission when he vomited several times, each vomit being enough to fill a small-sized chamber. His bowels were last opened two days previously, during which time he had not been able to carry on work as a flower-seller. There were no previous serious illnesses, except quinsies in 1906. He had "spasms" in his feet and hands on Jan. 16th, 1926. Family history was negative.

The splashing sounds were synchronous with the heart beat. On examining the abdomen the stomach was found to be enormously distended, reaching well below the umbilicus and far into both flanks. It appeared to contain gas and fluid; and deep palpation revealed that the succussion splashes were being caused by a forcibly pulsating aorta, every beat of which drove the stomach against the anterior abdominal wall. This impact was visible. Rolling the patient on to his side or prone immediately stopped the splashes; but they recurred at once on putting him on his back. The patient was retching and vomiting slightly during examination, the vomit being black. His heart was normal in size, position, and rhythm, the pulse-rate being 102. The temperature was 97·2° F.; respirations 22 per minute. There were numerous moist sounds at the lung bases, but no dullness or bronchial breathing. The teeth were carious and gums septic. There was a reducible right inguinal hernia and per rectum no scybalous masses could be felt, although the bowels had not been opened for two days. Although urine had not been passed for a day, the bladder was not distended. Tetany was well marked in the patient, spasms being present in hands and feet. Chvostek's sign was marked, a slight tap with the patella hammer over the facial nerve bringing on active twitching of the facial muscles. Trousseau's sign was present, compression of the forearm accentuating the typical "accoucheur's hand." We had no electrical apparatus handy for Erb's sign.

A diagnosis was made of acute dilatation of the stomach with aortic succussion and tetany. We were very interested in the acoustics of the condition, for though the stomach in these cases always contains gas and liquid, rhythmic loud succussion has apparently been reported only by Leonhardt in 1910. We do not think the loudness of the noise was due merely to excess of gas in the stomach relative to fluid. On first passing the stomach-tube we collected the gas ejected in a jar previously inverted in a basin of water. Only 5 oz. of gas were obtained in a large quantity of vomit. This gas did not burn but supported the combustion of a match.

We treated our patient on the classical lines suggested by Schnitzler in 1895 and independently by Box and Wallace in 1901. The man was put on his face with a pillow under his loins and chest, and the foot of the bed on blocks, thus endeavouring to relieve any obstructive pressure on the duodenum by the stomach or the superior mesenteric vessels. Hilton Fagge, when first describing the disease in 1873, remarked that after the relief of the stomach-tube his patient turned on one side of his own accord. Postural treatment instead of operative (Doolin, 1918) has reduced the mortality of this disease from 72 to 7 per cent. Secondary lines of treatment adopted were rectal salines to make good the loss of fluid, stomach lavage, and two doses of 1 c.cm. of pituitrin.

By the next morning (Jan. 17th) the patient was much relieved, and by the evening tetany and dilatation had disappeared. The bowels were open. Urine showed a trace of albumin and the urea-content was 1·7 per cent.

On Jan. 20th X ray examination showed a stomach in natural position, moderately active upon the meal. There was some definite delay in emptying at five and seven hours, and in the latter picture stomach residue was well defined. There was no proper duodenal picture throughout. This suggested the possibility of a pyloric ulcer. There was no occult blood in the fæces.

The patient made an uneventful recovery and was discharged on March 2nd, being directed to report at intervals, especially if there should be any recrudescence of gastric symptoms.

We report this case simply in view of the rare symptom of succussion splash; and we have no fresh light to throw on the ætiology of the condition. We confirm the well-known fact that the prone position readily relieved symptoms. This, so far as one case can allow any deductions to be drawn, would support the theory enunciated by Box and Wallace of duodenal occlusion by pressure from distended stomach. The literature of the subject abundantly shows that pressure by the superior mesenteric vessels can only be the cause of the condition in a few cases. Often at post-mortem examination the duodenum is found dilated on both sides of the vessels. Although some authors refer the condition to abnormalities in the sympathetic nervous system, we consider this attractive theory far from proved by the evidence adduced in their papers.

We desire to express our thanks to Mr. Basil Hood, our medical superintendent, for permission to publish this case; and to Dr. J. O. Harvey for his radiological report.

(*References at foot of next page.*)

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NOTTINGHAM.

(*Continued from p. 237.*)

SECTION OF MEDICINE.

THURSDAY, JULY 22ND.

AT the second session of this Section, DR. F. H. JACOB, the President, being in the chair, a discussion on

Blood Transfusion in the Treatment of Disease

was opened by Sir HUMPHRY ROLLESTON (Cambridge), who gave a brief account of the history of transfusion. Like most remedies powerful for good, its employment, he said, might be attended by unpleasant or serious results, and this, combined with difficulties in technique, had led to its adoption often being delayed until the patient was beyond curative measures, or even in extremis. The period during which transfused red cells persisted in the recipient's blood varied, according to Ashby's differential agglutination method, between 59 and 113 days. It was shorter in hæmolytic and toxic states, and longer in traumatic anæmia. Post-transfusion reactions had been reduced from 34 per cent. to 4 per cent. by improvement in technique, but according to Kordenat and Smithies all transfusions were followed by a rise of temperature within three hours. Some reactions, due to gross incompatibility, to air embolism, and pulmonary œdema should be obviated by care in typing the blood of donors and patients and in technique. It was, however, difficult to separate slight degrees of incompatibility in vitro, as they were often due to minor agglutinations. This was especially true in severe chronic anæmia, and there was evidence to show that in addition to the four recognised blood groups there were abnormal groups in pernicious anæmia, chronic hæmolytic jaundice, and malignant disease. Reactions were more likely to occur after large transfusions than after small ones, and also after repeated injections, when they might be due to anaphylactic shock, the patient having become sensitised. It might be wise, therefore, to repeat the blood tests before each transfusion. Kordenat and Smithies classified reactions as follows: (1) Acute and fulminant response due to agglutination and hæmolysis, coming on immediately. This should be prevented by careful preliminary typing of the donor's and recipient's blood. (2) Delayed and proteolytic response coming on from 1 to 12 hours after transfusion and ascribed to bacteriolysis and to protein cleavage of damaged tissues at an infective focus and not to hæmolysis. (3) Systemic or constitutional reactions which, like the last group, were not hæmolytic, as there was no evidence of blood destruction. No satisfactory explanation of these reactions was forthcoming, and it was possible that they might be due to different factors in each case.

There were four groups of cases, said Sir Humphry Rolleston, in which blood transfusion might be expected to do good. According to Keynes's classification they were as follows: (1) acute hæmorrhage and anæmia and associated shock; (2) chronic anæmia—to tide a patient over an operation and prolong life, or in the hope of cure, as in Addisonian anæmia; (3) hæmorrhagic diseases; and (4) general toxæmia, bacterial or chemical. He concluded his address with a detailed account of the effects of transfusion in each of these groups.

Prof. G. L. GULLAND (Edinburgh), giving his impressions of 40 years' experience of blood transfusion, referred to the reactions observed before the days of blood grouping. He was struck, he said, by the luck he had had, for in only two cases had there been trouble; since the introduction of grouping he had been less fortunate. In pernicious anæmia, which was due to a toxæmia, there was interference with the function of the bone-marrow, and the aim of therapeutics must be to stimulate its hyperplasia. Megaloblasts were formed, and if the patient recovered sufficiently, then normoblasts began to be formed also. In treating the disease the toxic processes must be exhausted and in the great majority of cases this should bring about a cure. The object of transfusing blood must be to help the patient to recover himself. There was always a chance that the necessary antibodies would be contained in the blood, and it was therefore better to use young patients as donors. If one transfusion did not lead to a response a second would not. In no case of acute leukæmia had transfusion affected the course of the disease. In chronic leukæmia the only indication for blood transfusion was intractable hæmorrhage which would not yield to any other treatment. In hæmophiliacs transfusion might be useful when teeth had to be removed. Prof. Gulland said that he had not yet made up his mind whether the treatment was efficacious in purpura hæmorrhagica, but some cases had improved and there had been no bad results.

Prof. RÉNÉ CRUCHET (Bordeaux) spoke on transfusion of blood from animal to man. Following Harvey's discovery of the circulation of the blood, bold surgeons, such as Wren, Boyle, and Clarke, between 1656 and 1660 began the practice of injecting drugs into the veins of animals and even of men—so-called infusory surgery. Thence arose transfusory surgery—i.e., transfusion of blood between animals, first of the same and then of different species. In England in 1667 Edmund King and Thomas Cox transfused successfully from calf to sheep, but it was the Frenchman Denys, of Montpellier, who first applied the method to man, and in 1667 transfused four subjects with the blood of lambs and calves. Later transfusion fell into disrepute, and was not revived until 1860, when Dr. Ore, of Bordeaux, began his classical studies on the subject. He transfused from animals to man, but his most favourable statistics showed a 16 per cent. mortality, and severe reactions were frequent. Meanwhile improvements in surgery and technique encouraged the hope that a renewed investigation would prove fruitful, and in 1921 Prof. Cruchet took up the work. The first injections of sheep and horses' blood into patients were followed by rather severe reactions and one death, but the majority of patients were benefited. Further experiments led to the conclusion that bad technique alone was responsible for accidents.

The principle of transfusion for any substance, continued Prof. Cruchet, was that the rate of flow into the vein must be inversely proportional to its viscosity. It was of the utmost importance to transfuse exceedingly slowly, especially during the first period. The first half cubic centimetre of blood should take a minute to pass into the vein. After this the flow should be accelerated in arithmetical progression until a quarter of the whole amount to be transfused had been given. The second period was then reached, and the flow was continued at a uniform rate until the end of the period, when it slacked off. In the third period the flow was again accelerated and kept at full speed till the operation was over. So long as the law of the rate of flow was not violated the compatibility or otherwise of the bloods was of no consequence, and accidents did not occur. The danger of agglutination was much exaggerated, for drugs which had the power of agglutinating human blood were frequently injected into veins without ill-effect. Hæmolysis was an independent phenomenon, and always occurred to a slight extent when animals' blood was transfused.

(*Continued from previous page.*)

ACUTE DILATATION OF STOMACH: REFERENCES.

1. Hilton Fagge: Guy's Hospital Reports, 1873.
2. C. R. Box and C. S. Wallace: THE LANCET, 1901, ii., 1259; 1903, i., 1031; 1911, ii., 215.
3. Campbell Thomson: Acute Dilatation of Stomach, 1902, THE LANCET, 1903, ii., 1303.
4. Leonhardt: Akute Magenweiterung, Inaug. Dissert., 1910, München.
5. O. J. Borchgrevink: Surg., Gyn., Obstet., 1913, xvi., 662.
6. W. Doolin: Brit. Jour. Surgery, 1918, vi., 125–34.
7. L. R. and C. A. Dragstedt: Jour. Amer. Med. Assoc., 1922, lxxix., 612.

Provided the transfusion was given according to the rule laid down no ill-results followed. It was easy experimentally to bring about the death of an animal by transfusing rapidly or, by rather slower transfusions, to produce reactions of every degree of severity. Death was due to dilatation of the right heart or to pulmonary embolism.

Dr. E. I. SPRIGGS (Ruthin) gave some practical details of technique and referred to the advantage of using the sphygmomanometer bag instead of the tourniquet. Except in very severe cases it was better not to cut down upon a vein; after dilatation had been produced with the bag the blood could be drawn off with a sharp needle and syringe. Where citrated blood was used an induction bag should be employed to supplement the force of gravity. If at any time during the transfusion there was clotting of the blood the experiment must be recommenced. Dr. Spriggs emphasised the importance of blood transfusion as a prophylactic measure against operative shock and also in cases of bowel hæmorrhage, secondary hæmorrhage, and pernicious anæmia. In cases of serious injuries it had been invaluable in preventing subsequent sepsis, as was shown during the war. It was well to bear in mind that the donors might be suffering from syphilis, and the Wassermann reaction should be tested if this had not been done during the preceding year.

Mr. GEOFFREY KEYNES (London) said that the growth of blood transfusion as a therapeutic measure had been slow, but it was now recognised as an essential part of surgical treatment. The branch of the British Red Cross Society known as the Blood Transfusion Service had done invaluable work in overcoming the difficulty of obtaining suitable donors. In surgery transfusion had been chiefly used in gastric and duodenal cases, but many other conditions had also benefited. Experience had shown that if transfusion was given purely with a view to replacing blood lost and discouraging further hæmorrhage, as in acute ulcer, it should be done without delay. Where operation was considered necessary the idea was to give one transfusion a few hours before operation, and a second while the operation was actually proceeding.

Dr. W. T. ROWE (Nottingham) reported some encouraging results in the treatment of infective endocarditis, pernicious anæmia, and purpura hæmorrhagica. The introduction of cool blood was one of the causes of rigor. The patient should be kept thoroughly warm both before and after blood transfusion.

Prof. E. A. GRAHAM (St. Louis, U.S.A.) said that blood transfusion was overdone in anæmia, but he was very optimistic about its use in well-selected cases. In severe burns transfusion might be useful.

Dr. ROBERT PLATT (Sheffield) spoke of the good results he had obtained when using defibrinated blood. He considered that the method introduced by Colebrook and Storer[1] was just as easy as the citrated method. In septic cases he had had fair results and inclined towards an optimistic view.

Sir HUMPHRY ROLLESTON in his reply said that Prof. Cruchet had clearly shown the necessity for slow transfusion. Possibly desensitisation took place during transfusion.

FRIDAY, JULY 23RD.

The third session of this Section was devoted to a discussion on

The Nature of Malignant Neoplasia and the Treatment of this Disease with Lead.

Dr. J. G. ADAMI (Liverpool) read a paper by Prof. Blair Bell (Liverpool), who was unable to be present owing to illness. It was, Prof. Bell considered, more essential to discover the nature of the cancerous process itself—the character of the change from normal growth to cancerous development—than to discover the so-called causes which were really predisposing factors. There were many extrinsic and intrinsic factors which could produce the pre-cancerous condition in, or in relation to, the cells concerned. These included radiation of various kinds, heat, trauma, infection, toxæmias, and senescence, all of which reduced the vitality of the cell. It seemed probable that the metabolic disturbance leading to the change might be oxygen starvation. The ancestral type to which the cell sought to return in the reversionary process was that of the chorionic epithelium, which had the power to invade and erode blood-vessels in its search for nutriment. It might be expected that cells of the chorionic epithelium would resemble malignant cells in structure, function, and chemical composition, and in toxicological affinities. The investigation of this working hypothesis undertaken at Liverpool had presented a formidable array of problems. In seeking for a therapeutic agent lead was chosen because of its action on chorionic epithelium, but to have found that chorionic epithelium and cancer cells were similar in nature and that lead was specifically toxic to both was not enough. The results must be improved and rendered consistent, and patients must be protected against the harmful effects of lead poisoning.

Prof. W. C. MCC. LEWIS (Liverpool) said that cancerous tissues, freshly removed from the body, had a higher electrical conductivity than normal tissues under the same conditions, and that this conductivity was higher in peripheral portions of a growth than in the central non-growing portion. The increased conductivity necessarily meant that there was increased permeability of membranes or septa in the cells to electrically charged atoms or ions, and these electrical measurements suggested that increased permeability was a definite feature of malignant disease. In malignant growths the ratio of lecithin to cholesterol was excessive. A similar ratio was found in the chorionic villi, and such results were strong evidence of a fundamental similarity between the two types of structure. No difference in the pH of the blood could be detected in malignancy, but any abnormal value would be masked by the buffer action of the blood and by the power of the liver and muscles to take up lactic acid. In the Rous sarcoma the blood which had passed through the tumour was found to contain more lactic acid than was normal, which pointed to the production of acid in the growing part of the tumour. In experimental tar cancer in rabbits certain observers found the pH of the plasma to be considerably lowered in the precancerous stage (from an average value of 7·31 to an average of 7·17). The blood of cancer patients usually exhibited anti-tryptic activity. Excessive glucolysis was shown by Warbury to be characteristic of malignant growth, but the fundamental problem of its nature and origin remained unsolved. The clinical value of lead was possibly a result of its causing the cessation of certain chemical processes due to enzymes, upon which the activity of the cell depended.

Action of Lead.

Prof. W. J. DILLING (Liverpool) said that his experiments on germination of frogs' eggs and on growth of tadpoles had shown that resistance to the poisonous effects of lead was directly related to the age of the tadpole, and that extremely weak solutions of lead acetate (1 in 100,000) retarded growth. It had been deduced: (1) that lead is more toxic to growing than to embryonic tissues; (2) that its adverse action is toxic, and may be responsible for temporary sterility and early abortion; (3) that in non-lethal amounts this retarding effect is inversely proportional to the age of the animal; and (4) that it inhibits growth. Experiments were made on the isolated intestine of a guinea-pig and rabbit to test the action of a partly ionic and partly colloidal preparation of lead. Lead produced relaxation and inhibition of peristalsis without interfering with the vagus mechanism of the muscle. It was suggested that colic might be prevented by linking up a phosphorus ion with lead. Prof. Dilling referred to a lead preparation which was going to be released and which might prove both useful and safe.

Prof. CARTER WOOD (Crocker Institute for Cancer Research, Columbia) described the results of his

[1] THE LANCET, 1923, ii., 1394.

investigation into the changes produced by lead on large transplantable rat tumours. Intravenous injections of fresh preparations of the non-toxic mixture of lead were given, and after two or three days the tumour diminished in size and there was sometimes a little redness and œdema around it. On section the tumours thus treated were found to be filled with blood, especially the sarcomas; the carcinomas were apt to shrink and did not show so much hæmorrhage. In these advanced cases it had been found difficult to sterilise all the cells of the tumour, but occasionally cure was maintained. On microscopical examination the capillaries of the capsule were seen to be distended with red blood corpuscles, which accounted for the pain sometimes present 48 hours after injection. In the tumour itself thrombi were found partially organised, and round these thrombosed vessels there was softening. In the liver, after small doses, there might be focal necrosis. Prof. Wood concluded that the first effect of the lead was a thrombosis. The surrounding tissues then underwent change owing to the toxic action of the lead upon them. The tumours were not cured in all cases, but these tumours in the rat were more malignant than in man. Lead did exert a toxic influence on them, and cures had occurred.

Prof. E. E. GLYNN (Liverpool) said that investigations would go on for at least another year. The following conclusions had so far been reached: (1) There was histological evidence that lead had damaged a very small percentage of the malignant neoplasms examined from patients. It would not be expected that a large percentage would show damage, because only a comparatively small number of patients were clinically benefited by lead. There was a greater tendency to necrosis, and sometimes to a slowing in the rate of growth so that the malignant cells had time to become more specialised; thus keratinisation and the formation of cell nests and goblet cells appeared to be more common. (2) There was no damage to malignant growths which was histologically pathognomonic of lead. It most probably acted by increasing the regressive changes which normally occurred to a greater or less degree in all malignant neoplasms. The tendency to thrombosis in carcinoma was no greater; thrombosis in sarcoma might be more common, but it was probably secondary. The absence, however, of any characteristic changes was no proof that lead had no action. If an investigation were made into the effects of arsenic or mercury on chancres or gummata nothing histologically pathognomonic of these remedies would be found. (3) The effect of lead upon a similar malignant growth varied very greatly, even when it was administered under apparently the same conditions. This suggested that the patients' tissues or resistance, using the term in its widest sense, probably played a part in determining the success or failure of treatment, as they did in malaria treated with quinine and in syphilis treated with mercury.

Treatment with Lead.

Dr. L. CUNNINGHAM (Liverpool) said that in treating cases of malignant disease with lead one of the greatest difficulties had been the selection of cases which presented a reasonable chance of being benefited and could at the same time withstand the toxic effects of the drug. Some patients were unaffected by large doses; others were made very ill and might even die after a moderate dose. Before undertaking treatment he carried out complete investigations on the blood and urine, and if necessary made liver function tests as well. The administration of lead was usually accompanied by some reaction. Toxic effects had been observed, not only in the blood and blood-forming organs, but also in the gastro-intestinal system, the kidneys, liver, and, to a lesser extent, the central nervous system. He described these effects and outlined their treatment. The preparation of lead was nearly always given intravenously, but ionisation was also used for superficial tumours. The dosage varied with the particular case under treatment, and the investigators were not satisfied that the optimal dose had yet been discovered. Latterly they had given four doses of 15 c.cm. of the 0·5 per cent. preparation at intervals of 10 days. After a month's rest a further course of smaller doses was given, until a total of 0·6 g. of lead had been reached. Out of 227 cases treated 50 had shown benefit. The disease was believed to be cured in 41.

Dr. S. MILLER (Harrogate) said that so far 18 cases at Harrogate had been treated with lead. No serious reaction had occurred, but one patient had vomited persistently for ten days. On the whole during the last three months improvement had occurred. The blood should be examined, for the occurrence of stippling was an indication of the effect the lead was having.

Mr. FRANK COOK (London) described the satisfactory results he had had in what was considered a hopeless case. Lead should not be used, he thought, unless the doctor was in touch with a body of men who were constantly practising with it.

Dr. CUNNINGHAM, replying, agreed that blood films should be taken during treatment, about every month; Leishman's stain could be used to show stippling. At present it was unwise for a doctor to treat cases on his own; he should be in touch with a clinic.

SECTION OF SURGERY.

WEDNESDAY, JULY 21ST.

In the absence of Sir D'ARCY POWER, owing to illness, Sir JAMES BERRY presided at the first two sessions of this Section. On Wednesday a discussion on

Cerebral Tumours

was opened by Mr. PERCY SARGENT (London), who began by pointing out that much of Sir Victor Horsley's work still held good to-day. Horsley had all along condemned expectant treatment, for in cases of cerebral tumour the patient could look to the surgeon alone for relief. Radiotherapy was very disappointing, though occasionally the employment of radium combined with operation in a glioma had seemed to modify the natural course of the case. It was to-day possible to predict the exact site and the probable nature of the growth.

Taking in succession the various types of tumour, Mr. Sargent said that *gliomata* were of two kinds—those which are apparently encapsuled and may undergo cystic degeneration, and those which grow rapidly and infiltrate the surrounding tissues, though they never involve the membranes or the bone. The prognosis was better when they affected the cerebellum. *Endotheliomata* were innocent in nature and the most favourable of all the intracranial tumours for radical treatment. They were easily enucleated, were attached to the overlying dura mater, but never invaded the brain. The operative mortality was, however, high. Of the *cerebello-pontine tumours* 90 per cent. were neurofibromata. They were often encapsuled and arose near the eighth nerve. Deafness and noises in the head might be the only symptoms. The corneal reflex was often diminished. Intracranial pressure developed only late. Their removal was often difficult as they lay so near the medulla, and interference of the blood-supply of the latter with its serious consequences might result from the operation. *Pituitary tumours* were of two types, those of the gland proper, which were usually adenomata, and those of the interpeduncular space. It was the former which were most favourable for operation.

Figures were quoted to show that the results of operation were not so deplorable as was often thought. In a fair proportion, varying with the nature of the growth and the time of diagnosis, a permanent cure without any subsequent neurological defect followed. Better results were to be obtained only by earlier diagnosis, and it was to be regretted that the signs of a tumour of the brain as commonly taught were headache, vomiting, and optic neuritis. These were rather the signs of increased cerebral pressure. There should be greater familiarity with the ophthalmoscope, but he felt that earlier diagnosis would be possible only

from coöperation with the neurologist. X rays might show up the tumour if there were any calcareous matter present, a condition rarely seen in cerebral tumours; they were occasionally useful in pituitary tumours and where an endothelioma had eroded the inner table of the skull. He referred to the relation to trauma, and thought that, while it was impossible to be absolutely certain, there did seem to be some relation between a severe head injury and the occasional development of a glioma.

Mr. H. S. SOUTTAR (London) demonstrated an ingenious instrument for turning down large osteoplastic flaps. He felt that the bone flaps should be replaced and little of the skull should be removed. He turned down a large scalp flap and found that it did not interfere with the vitality of the bone. He removed the bone under local anæsthesia. The dura mater, he said, was insensitive.

Mr. G. JEFFERSON (Manchester) emphasised the difference between skull surgery and brain surgery. The former was easy and largely a matter of technique, while the latter required in addition extensive training in diagnosis and pathology. He felt that neurological surgery was not nearly as advanced as that of other regions, which he attributed to the prevailing idea that a diagnosis of cerebral tumour could be made only with difficulty, and that when this had been done, apart from improvement in pressure symptoms, surgery offered but little hope of relief and none of cure. This, however, was contrary to the experience of those who paid particular attention to this branch of surgery.

Mr. J. P. ROSS (London) pointed out that it was important when operating to allow the fluid to escape slowly so that the pressure was gradually lowered, otherwise œdema of the brain was apt to follow. Cerebral compression arising after the operation might be due to the onset of cerebral œdema or to hæmorrhage. The former might be combated by the intravenous injection of 75 c.cm. of 15 per cent. saline. Otherwise it was necessary to re-operate and take away part of the bone. The latter could be prevented by greater care in stopping the bleeding during the operation.

A discussion on the

Place of Gastro-enterostomy in Gastric and Duodenal Surgery

was opened by Mr. H. J. PATERSON (London), who remarked that no other operation had done so much to lead to human happiness. Its very success had led to its employment in unsuitable cases, and it was to this and to an imperfect technique that some of the bad after-results were due. Permanent cures followed in 82 per cent. of gastric ulcers and in over 90 per cent. of duodenal ulcers. This percentage would undoubtedly be higher had he not included the cases he could not trace among those regarded as not cured. The results after anterior gastro-enterostomy were somewhat better than after the posterior method, as the alkaline pancreatic juice flowed more easily into the stomach and neutralised the acidity of the gastric juice, which was the most active factor in keeping up the ulceration. It was the method he now practically always adopted. The operation should never be done merely upon a clinical or X ray diagnosis. It was essential that the ulcer should be seen and felt. This operation did not cure the ulceration, but merely placed it under the best conditions for cure. It was essential that the operation should be followed by prolonged and effective after-treatment. In some cases owing to the condition of the home-life this could not be done, which was responsible for poor results. There was great need for convalescent homes and after-care centres in this country. Gastro-enterostomy should be done in perforated ulcers as convalescence was smoother and shorter. It should not be done if it were suspected that the ulcer were malignant. He did not operate for hæmorrhage, as this was best treated by medical means.

The advocates of partial gastrectomy urged that it was a more certain cure of the ulcer, that it prevented the later onset of cancer, and that jejunal ulcer did not follow. The jejunal ulcer was due to hyperacidity and did not result after gastro-enterostomy if proper after-treatment were carried out. It was stated that 60 per cent. of gastric ulcers became malignant. This was not borne out by the clinical or pathological findings. The long history obtained in gastric cancer was due not to preceding ulceration, but to intestinal stasis. None claimed that gastro-enterostomy was a preventive against cancer; yet only 2 per cent. of such cases were stated to die of cancer, and if these were carefully investigated it would be found that the diagnosis was wrong and that the cancer arose in other parts. The mortality after gastrectomy was as high as the combined mortality and the complications after gastro-enterostomy. Time alone could show whether the end-results were better, but it should not be forgotten that some of the strongest advocates of gastrectomy to-day were equally strong in their advocacy of gastro-enterostomy some years ago.

Prof. FINSTERER (Vienna) said that he no longer performed gastro-enterostomy as the results were not satisfactory. The ulcer did not heal, jejunal ulcers occurred, and hæmorrhage and perforation were not unknown. He did a gastrectomy in all cases of gastric ulcer unless complicated by a perforation, and a duodenectomy in duodenal ulcers unless the ulcer extended as far as the ampulla of Vater or unless the common bile-duct could not be separated from it. The mortality for gastrectomy was 4 per cent. and for duodenectomy 2 per cent. in 593 resections, which included 86 patients between 60 and 80. The operation should be followed by a light diet for three months, at the end of which time the patients were able to go on a full diet and to resume ordinary work; 98 per cent. were permanently cured. Only one gastro-jejunal ulcer occurred in his cases. It was important to remove sufficient of the stomach; the pylorus and at least two-thirds of the body should be removed. He preferred the Billroth II. method and avoided the Y-shaped anastomosis.

Mr. K. W. MONSARRAT (Liverpool) pointed out that when the ulcer was healed and merely a stenosis present, a perfect result followed gastro-enterostomy. When there was active ulceration the results were not so good. He considered the position of the opening was of great importance and should be as low as possible. Whenever possible he in addition excised a gastric ulcer and infolded a duodenal ulcer.

Mr. CHARLES ROBERTS (Manchester) stressed the importance of efficient after-treatment. It was not sufficient to give only verbal advice as this was often imperfectly understood and soon forgotten. Printed instructions should be issued. An alkaline bismuth mixture should be continued for at least six months. An anterior gastro-enterostomy was less favourable than a posterior as it predisposed to intestinal obstruction. The appendix should always be removed. He performed gastrectomy only in large gastric ulcers or in cases in which gastro-enterostomy was not successful.

Mr. E. DEANESLY (Wolverhampton) felt that in the majority of gastric ulcers some form of resection was necessary, while in duodenal ulcer gastro-enterostomy led to a cure. The bad results that followed the latter operation were due to contraction of the opening, which prevented rapid emptying of the stomach. This he considered was essential to the rapid healing of the ulcer. To facilitate it he in some cases resorted to Finney's operation.

Mr. A. B. MITCHELL (Belfast) stated that while a gastro-enterostomy in suitable cases did good, he was doubtful if any other operation led to more suffering when carried out in unsuitable cases or with bad technique. When hæmorrhage followed a gastro-enterostomy for duodenal ulcer the latter was often in the first part of the duodenum and fixed to the posterior wall. If the duodenal branch of the gastro-duodenal artery were picked up and ligatured at the operation this hæmorrhage could be prevented. When hæmorrhage followed gastro-enterostomy it came as often from the ulcer as from the anastomosis. With the perforated ulcer he did a gastro-enterostomy if th-

shock was not too great and if there was not too much extravasation into the peritoneal cavity. It could be done more often with a perforated duodenal ulcer as owing to the associated spasm of the gastric sphincter there was less extravasation and less shock.

Sir WILLIAM WHEELER (Dublin) felt that in operating in cases of ulcer two factors should be taken into account—the ability of the individual and the local condition present. Cancer did at times follow an ulcer, and he had come across three undoubted cases. When performing gastro-enterostomy he infolded the ulcer to prevent perforation and picked up the arteries to prevent bleeding.

Prof. H. A. BRUCE (Toronto) pointed out that while gastrectomy in the hands of an expert might be followed by as small a mortality as gastro-enterostomy and might lead to better end-results, should it come to be regarded as the routine operation it might be followed by deplorable results. Finney's operation had not been given up in America, and there was a slight tendency in recent years to resort to it somewhat more frequently.

Prof. D. P. D. WILKIE (Edinburgh) thought that most surgeons were satisfied with gastro-enterostomy as relief of the symptoms so often followed, and unfortunate sequelæ were very rare, particularly in duodenal ulcer. Where the stomach was hypertonic or the ulcer inclined to bleed freedom from symptoms followed only in 50 per cent. It had little effect on the large florid ulcer. He did not consider gastrectomy had stood the test of time. The stomach was not a useless organ as was sometimes supposed, and after gastrectomy he had felt that he was not justified in removing so much of it for so small a lesion. He now performed a posterior gastro-enterostomy and whenever possible excised the ulcer, otherwise he infolded it. The bad results were due to faulty technique and the wrong choice of cases. Two conditions were apt to follow—jejunal ulcer and bilious vomiting. The former was due to hyperacidity and could be prevented by effective post-operative treatment, while the latter was often due to too small an opening in the mesocolon.

THURSDAY, JULY 22ND.

Carcinoma of the Tongue.

The discussion was opened by Mr. DUNCAN FITZWILLIAMS (London), who began by emphasising the need for a preliminary cleansing of the ulcer and of the mouth for some days before operation, when the patient should accustom himself to swallowing from the feeding tube. He always used warmed ether as the anæsthetic and did a preliminary laryngotomy to avoid ligature of the lingual artery. Intratracheal ether had the drawback that the introduction of the tube took time and might cause bleeding from the growth. Morphia should be given before operation only in small doses, as it interfered with the swallowing and coughing reflexes, and should be avoided as far as possible in the after-treatment. He removed the tongue first by scissors and knife and did not employ diathermy, and waited about a fortnight for the wound to heal before removing the glands. As the primary growth was removed there was no tendency for the cancer to spread in the interval. The carcinoma does not extend laterally along the mucous membrane, but deeply into the substance of the tongue. Consequently, even if a full three-quarters of an inch of healthy tissue were removed around the growth, enough mucous membrane would be left to allow of the margins being sutured together. In this way a large ulcerating wound was avoided, there was much less pain, and much less tendency to the development of broncho-pneumonia. At the end of the operation the plugging was removed from the pharynx and the laryngotomy tube withdrawn, when the patient was able to breathe through the natural channels. He removed the glands by the block dissection of Crile, but did not touch the opposite side of the neck unless the glands on the same side were much involved.

Sir WILLIAM MILLIGAN (Manchester) dealt with the treatment by radio-diathermy. Where the primary growth was operable, and the lymphatic involvement not too great, surgical removal was always indicated. If this were to be done he did not consider previous irradiation of the neck should be carried out, as it interfered with the successful removal of the growth. Radium and diathermy should be reserved for inoperable cases or when operation was refused. Even if a cure did not take place, they often did good by giving complete freedom from symptoms even for years, and relieved the pain, prevented hæmorrhage, and diminished the dysphagia. When surgical intervention was deemed impracticable owing to the extent of the growth, an attempt should be made to remove it by the diathermy knife or to destroy it by the diathermy button. When the removal of the growth is contra-indicated, radium should be inserted into its substance. The lingual artery should invariably be tied. Screened tubes might be buried in the growth, but owing to action of beta rays being more local than gamma, they were apt to produce necrosis, followed by sepsis if retained for more than 48 hours. Further, it was impossible to keep screened tubes accurately in position in a mobile organ such as the tongue. Consequently he had been implanting into the substance of the growth large numbers of "seeds" containing emanation. These should be placed in parallel rows 1 cm. apart, when they became encapsuled or sloughed out, the action being due to a devitalisation of the malignant cells. Irradiation of the lymphatic fields should be an invariable post-operative procedure. The best method was to implant screened tubes, otherwise the surface application of radium or treatment by X rays should be carried out. Of 812 cases treated in this way, all of which were in an advanced stage and inoperable, 51 had remained well for periods varying from one to nine years. Unscreened tubes were employed in 41 of these, and he believed it would be the method of the future. Treatment by radium was still, however, in its experimental stage, and it was inadvisable to be dogmatic on the value of any method.

Mr. W. S. DICKIE (Middlesbrough) dealt with cancer of the postero-lateral part of the tongue, which usually arose in the anterior pillar of the fauces. The jaw dominated the surgery of the tongue, and he removed the lower jaw on that side together with the coronoid process and the condyle after dividing it at the canine fossa. He then removed the half of the tongue, the tonsils, and both pillars of the fauces. Later he attacked the glands, but did not do a block dissection, as recurrence took place only in the upper part of the neck. The operative mortality was high and among 17 cases there were 4 deaths, 5 had in the meantime died of recurrences, but 8 were still alive. Two cases were shown, one done four years ago. There was remarkably little disfigurement, the mouth could be fully opened, and there was little alteration in the voice.

Mr. GORDON TAYLOR (London) considered that the disease was seen only in those who had had syphilis or who had neglected mouths. Of the cases operated upon before the war all except one had died within a year. For the last five and a half years he had removed the tongue with the diathermy knife, taking away part of the alveolar margin to gain access. He later proceeded to do a block dissection of the glands on that side of the neck, even if enlarged glands were present. If enlarged glands were detected during the operation he proceeded to do a complete block dissection on the opposite side of the neck as well; otherwise he removed only the glands in the upper part. Of the cases that recovered 50 per cent. were now alive and well—a big improvement. There was, however, a high operative mortality, 95 per cent. of the deaths being due to broncho-pneumonia and taking place by the third day. He introduced a drainage-tube through a stab wound in the floor of the mouth to prevent the infected material being aspirated into the lungs. While a laryngotomy facilitated removal of the tongue, it did not prevent the onset of broncho-pneumonia. The three stages of the operation could, if necessary, be done under local anæsthesia.

Mr. E. DEANESLY (Wolverhampton) considered that the trouble lay in removing the glands and not the growth, for recurrence was rarely seen in the mouth. It was only when the growth was extensive that he used diathermy. In elderly people he did not remove the glands.

Mr. STANFORD CADE (London) considered that the primary growth should be treated by the insertion of radium needles. If the glands were operable they should be removed by block dissection, otherwise radium should be applied. At the Curie Institute it was claimed that 25 per cent. were alive at the end of five years.

Mr. W. H. CARSON (London) read a paper on

Post-operative Treatment of Carcinoma of the Breast.

During the operation he removed the minimum amount of skin to make certain of primary union, and the incision should be so designed that the scar was kept out of the axilla. To prevent the shock which might develop three to four hours after the operation the patient was placed between blankets under a cradle heated with electrical lamps, and was given one pint of saline containing 5 per cent. glucose immediately on returning to bed, and this was repeated in one hour. Morphia was given if necessary. It was important to avoid hyper-extension of the arm during the operation, as in two of his cases paralysis of the biceps followed, though return of power took place. He always drained with a tube in the axilla, which was removed on the second day. It was important to look out for accumulations of fluid that might take place below the clavicle and over the upper part of the rectus. The bandage over the chest should not be too tight. The arm should be kept at a right angle from the beginning and should be fastened to the bed. The patient should be sat up after the first few hours. To prevent the scar becoming adherent to the chest wall, the skin should be gently massaged each day.

Mr. R. E. KELLY (Liverpool) considered that more skin should be taken away and that the flaps should be carefully cleaned, as recurrences did not take place in the scar, but about one and a half inches away.

Mr. GARNETT WRIGHT (Manchester) emphasised the placing of the incision so that no band formed between the chest wall and the inner aspect of the upper arm. He preferred a continuous suture for the skin, as it reduced the tension more than interrupted sutures. He did not consider that placing the arm at a right angle was of much importance provided active and passive movements were carried out from the day after the operation.

Mr. GORDON TAYLOR stated that he had employed X ray irradiation in cases he had operated upon since the war. He considered the results were worse than when it was not employed, and he had now given it up. Much of the bleeding during the operation came from the smaller vessels of the skin, and this could be prevented by employing the diathermy knife.

Mr. G. SIMPSON considered that X ray irradiation was undoubtedly of value in after-treatment.

Mr. A. B. MITCHELL (Belfast) read a paper on the

Treatment of Spiral Fractures.

He pointed out that the difficulties in treatment were due to the sharp end of the upper fragment becoming firmly embedded in the muscles and to the tendency of the lower fragment to rotate. If he could not produce accurate apposition by the end of a week he always operated. By bringing both fragments out into the wound accurate apposition could be obtained. This was maintained by wire wound round the ends, which did not pierce the bone, and plates were unnecessary and might do much damage. Kangaroo tendon and silk could not be tied sufficiently tightly to maintain the apposition.

FRIDAY, JULY 23RD.

This was a joint meeting with the Section of Anæsthetics, at which Dr. SAMUEL JOHNSTON (Toronto) presided, when a discussion on

Anæsthesia in Abdominal Surgery

was opened by Prof. HANS FINSTERER (Vienna). He stated that in major operations upon the abdomen he had given up anæsthetising by ether and chloroform as, though there was no difficulty in obtaining relaxation, a fall in the blood pressure and much shock followed, lung complications were common, and serious changes in the heart, liver, and kidneys were apt to supervene. In acute abdominal affections they often gave rise to fatal hepatic insufficiency, and in long abdominal operations he felt their use led to interference with the resisting power of the peritoneum and favoured the onset of peritonitis. He therefore had fallen back upon some variety of regional anæsthesia. Novocaine gave good results and 200 c.cm. of ½ per cent. solution might be used, but it was important to take into account the general condition of the patient, and if there was marked cachexia or anæmia the strength should be ¼ per cent. If the dose were adjusted to suit the patient's strength, pallor, restlessness, and air hunger were avoided. Tutocaine was coming into favour in Germany and could be used in strengths of 1/5 to 1/8 per cent.; it was more effective, and vomiting was rarer. If the patient was very nervous he induced with ether, and this might be given in small amounts throughout the operation. If, however, the patient insisted upon general anæsthesia alone he now refused to operate. He had been impressed with the nitrous-oxide-oxygen method of the Americans, which he should have preferred, but this was too expensive to have any scope in Austria. Ethylene and acetylene were too inflammable. In operations upon the abdominal cavity it was necessary to anæsthetise the peritoneum of the posterior as well as the anterior abdominal wall. Injection of the mesentery alone combined with infiltration anæsthesia was of value only if there was no pulling upon the viscera. He had given up spinal anæsthesia, as the fall in the blood pressure often led to severe collapse. Paravertebral anæsthesia was of advantage when the operation was limited to one side of the abdomen, as in those upon the gall-bladder and resection of the colon. He, however, now used chiefly splanchnic anæsthesia in which the splanchnic nerve trunks were injected. This could be done posteriorly by the method of Kappis or anteriorly by the method of Braun after opening the peritoneum. Kappis's method was somewhat more dangerous than that of Braun owing to the possibility of injecting the fluid into the veins or into the spinal cord; it was, however, the method chiefly employed in England and America. With Braun's method 70 c.cm. of ½ per cent. novocaine were sufficient. Care should be taken to displace the vena cava with the forefinger, so that the injection was not made directly into it. If it was impossible to separate the aorta and the cava the novocaine had better be injected into the mesentery. In 8 per cent. of cases the administration of ether was necessary, chiefly in cases where marked adhesions were present, but the amount needed was very small. Should exploration of the whole of the abdominal cavity be necessary, temporary general anæsthesia would be necessary. In operations upon the lower abdomen parasacral anæsthesia was not sufficient for removal of the rectum. The injection of novocaine at the base of the meso-sigmoid from behind or on the anterior surface of the fifth lumbar vertebra after opening the peritoneum was needed. As a result of regional anæsthesia lung complications, he said, had disappeared, shock was much less, and he was prepared to operate upon patients whose condition a few years ago would have been regarded as hopeless. In addition perfect prolonged relaxation could be obtained. Statistics of such severe operations as resection of the stomach or colon, removal of the gall-bladder, &c., were given to show the marked improvement that had appeared in recent years since this method was introduced. The results in patients of 60 to 80 were as satisfactory as those in younger ones.

Dr. C. W. MOOTS (Toledo, Ohio) emphasised the following points: 1. The necessity for a complete clinical examination before the operation when the activity of all the vital organs should be investigated. A preliminary consultation between the surgeon and the anæsthetist should always be held. 2. The blood

pressure should be taken before and every five minutes during the operation. The systolic pressure alone is of little value, and more importance should be attached to the diastolic pressure and the pulse pressure. A comparison of these with the pulse-rate gave the earliest warning of the onset of shock, which might be prevented by the immediate administration of intravenous saline. 3. The administration of nitrous oxide and oxygen alone. Nitrous oxide acts only by depriving the brain of oxygen, and it did not affect the cells of other organs such as the heart and kidneys. Its action ceased immediately its administration was stopped. It was possible, provided the anæsthetist had thoroughly learnt the technique and the surgeon was gentle with his manipulations, to obtain complete relaxation in all abdominal operations, and consequently there was no necessity for ether or local infiltration. Post-operative nausea and vomiting were extremely rare, and the patient came round without any struggling. 4. In the preliminary treatment active purgation should be avoided and fluids should be given up to within half an hour of the operation. Morphia, gr. ¼, with scopolamine, gr. 1/200, should be given two hours before the operation and repeated in an hour's time. During an operation he avoided the extreme Trendelenburg position even for pelvic operations, as it predisposed to shock. Nitrous oxide-oxygen anæsthesia was quite suitable for cases of intestinal obstruction provided the intestinal contents were aspirated by an electrical suction pump through a small incision immediately the abdomen was opened. In these cases intravenous saline was administered from the start.

DR. C. LANGTON HEWER (London) stated that gastric surgery made large demands upon the anæsthetist as it was that part of the abdomen in which respiratory movement was at its maximum, and relaxation might be difficult to produce as traction upon the peritoneum might result in laryngeal spasm. In addition shock and pulmonary complications were more liable to follow than after operations elsewhere. He considered that endotracheal nitrous oxide-oxygen-ether anæsthesia was preferable to regional and splanchnic anæsthesia. When the patient was fully anæsthetised a tracheal catheter was slipped between the vocal cords and a mixture of 50 per cent. nitrous oxide and 50 per cent. oxygen passed through ether was first employed. The amount and proportions of the gases were regulated until the colour of the mucous membrane was just pink and the manometer showed a pressure of 5 mm. Hg on inspiration. At the end of the anæsthesia a mixture of 90 per cent. oxygen and 10 per cent. carbon dioxide was substituted in order to stimulate the respiratory centre and so cause forced breathing and the expulsion of the ether. To avoid pulmonary complications atropine should be given in small doses repeated after the operation about 1/200 gr. three times a day for three days being usually employed. In this way a perfect anæsthesia for upper abdominal work was obtained, and when once a surgeon had operated with it he almost invariably preferred it for his other cases. It was suitable for cases of intestinal obstruction as, should vomiting occur, owing to the positive pressure in the lungs there was no tendency for the vomit to be aspirated into the lungs.

MR. GORDON TAYLOR said that he employed local infiltration of the abdominal wall together with splanchnic anæsthesia by the posterior method of Kappis and a light ether anæsthesia from the start. The latter abolished all psychical shock, made the injection of the novocaine more easy, and less morphia and scopolamine were needed. In addition, should the local and splanchnic anæsthesia fail towards the end of a long operation the general anæsthesia could be easily deepened. The objection to the combined method was that the injection of the splanchnics by the posterior method took time and a sudden fall in the blood pressure might ensue. The latter was only temporary and was associated with no rise in the pulse-rate. The advantages were that pneumonia and chest complications were almost completely eliminated, long operations could be performed with little shock, there was complete relaxation, and the breathing was very quiet. In the lower abdomen he used spinal with caudal anæsthesia.

MR. K. W. MONSARRAT (Liverpool) considered that no one method should be used as a routine, and the condition of the patient should be given due consideration. With a powerful stout man gas and oxygen did not suffice and a general anæsthetic was necessary. Where there was a liability to chest trouble he preferred warm ether given by the Shipway method. With a general anæsthesia regional anæsthesia or local infiltration should always be carried out as it aided relaxation and prevented that collapse which followed if the skin incision were made when the anæsthesia was very light. In operation upon the stomach and bowel he infiltrated the mesentery. It was important to recognise the action of ether upon the pancreas. Ketosis and acidosis might follow its use and were associated with changes in the blood-sugar. These with the post-anæsthetic vomiting could be relieved by the injection of 10 units of insulin immediately after the operation, which could be repeated if necessary. He strongly advised a preliminary consultation between the surgeon and the anæsthetist.

MR. J. P. LOCKHART-MUMMERY (London) considered that as yet we had not a very satisfactory local anæsthetic, as novocaine did not in all cases have sufficient penetrating powers. Parasacral anæsthesia took longer than, and had no advantage over, spinal anæsthesia. The fall in blood pressure that took place in the latter was purely mechanical and could be prevented by slightly tilting the table. He now used regional or spinal anæsthesia combined with gas and oxygen. For cases of acute intestinal obstruction he employed high spinal anæsthesia.

MR. CADE considered that splanchnic anæsthesia had its dangers. One was the intravenous injection of novocaine might occur and was dangerous as it led to a sudden fall in the blood pressure; it could be prevented by repeatedly withdrawing the piston during the injection. A delayed reaction shown by a fall in the blood pressure and a rise in the pulse-rate might take place about the second day. He did not consider a general anæsthetic was necessary, as any psychical action could be avoided by the proper administration of hypnotics. We were, he thought, too apt to refer to the possible damaging action of ether, while ignoring that which might result from large doses of drugs.

EXHIBITION OF DRUGS, INSTRUMENTS, FOODS, AND APPLIANCES.

The usual trade exhibition was opened in the Victoria Halls on Tuesday, July 20th. The Mayor welcomed the Association and called on the President-Elect to open the exhibition. MR. HOGARTH said that the display had now become an essential and integral part of the annual meeting, and emphasised the debt of the profession to the firms which supplied them with their tools. There was true coöperation between them and the profession.

There were 84 stalls, and a brief notice of the more important exhibits on each is given below.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

[1] Burroughs Wellcome and Co. (The Wellcome Foundation, Ltd., Snow Hill Buildings, London, E.C. 1) had their exhibit ingeniously arranged on different coloured panels, each of which corresponded with an organ similarly coloured on a large anatomical chart. Of their many "Tabloid," "Hypoloid," and "Soloid" products may be mentioned "Tabloid" Digitalis Leaf, grown in this country, physiologically standardised and containing the active principle; "Tabloid" hypodermic insulin hypochloride, the only compressed British insulin; and the "Wellcome" Brand materials for Schick and Dick tests, diphtheria prophylactic and diphtheria and scarlet fever antitoxins.—[2] Boots Pure Drug Co., Ltd. (Station-treet, Nottingham), showed a large selection of their

products, including insulin, glandular extracts, compressed tablets, and surgical sundries.—[4] Parke, Davis and Co. (51, Beak-street, London, W. 1) had a number of pharmaceutical preparations, vaccines, and gland products, including a new type of bacterial antigen, which can be used either prophylactically or therapeutically. It is believed to be the greatest advance yet made, is free from cells and toxic matter, and nearly free from protein, and so can be used in acute conditions. Four types are prepared—streptococcal, gonococcal, pneumococcal, and pertussis. Also the most potent scarlet fever streptococcus antitoxin yet produced and toxin for the Dick test. "Sanocrysin" was demonstrated for the first time in this country, but is not on the open market owing to its danger. This firm guarantee their parathyroid gland tablets to contain 90 per cent. of the dried gland substance.—[16] Oppenheimer, Son and Co., Ltd. (179, Queen Victoria-street, E.C. 4) showed a selection of their "Bi-Palatinoids" and "Palatinoids"; glandular products in palatable form; "Roboleine," the vitamin food; "Maglactis," a pure magnesium hydrate in suspension; and instruments for the evolution of 99 per cent. pure oxygen gas from chemical cubes.—[19] Schering, Ltd. (3, Lloyd's-avenue, London, E.C. 3), showed a selection of their well-known products: "Atophan," "Veramon," "Medinal"; also "Maturin," a test believed to give 90 per cent. accurate results in the diagnosis of early pregnancy.—[21] W. A. Wharram, Ltd. (34, Lady-lane, Leeds), showed popular pepsin preparations, including "Liq. Bismuth Co. c. Pepsin"; "Linctus Heroin Hydrochlor. c. Terpin Hyd," of which each fluid drachm is equivalent to 1/12 gr. of the alkaloid; "Mist. Neurasthen. Conc."; "Syrup Hypophosph. Co.," containing the combined hypophosphites in a neutral form; a soothing antiseptic, "Boraline Cream"; and an analgesic ointment.—[26] The Anglo-American Oil Co., Ltd. (Albert-street, Camden Town, London, N.W. 1), showed their paraffin products: "Nujol," "Cream of Nujol with Agar," and "Mistol"; also "Flit" the general household insecticide.—[27] The Crookes' Laboratories (22 Chenies-street, London, W.C. 1) showed a selection of Collosols, particularly Collosol Lead M.A.; Collosol Lactalumina, a neutral preparation of aluminium hydroxide which neutralises acidity by colloidal attraction; Collosol Ichthyol; and Collosol Silica with *Drosera rotundifolia*. They also distributed an "Index of Treatment," containing prescriptions, bibliography, and price list.—[41] The British Drug Houses, Ltd. (London, N. 1), exhibited medical specialties, including Æther Puriss. B.D.H.; the Borocaines; Caprokol, a new synthetic hexyl-resorcinol preparation; thyroxine tablets; and a series of microscopic stains.—[42] Messrs. Allen and Hanburys, Ltd. (Bethnal Green, E. 2), in addition to their "Byno" and "Polyglandin" preparations, showed two new substances: "Acidophilus Jelly," an agar culture of *B. acidophilus*; and Cellulose Flour, a preparation for adding bulk to a diet. They also showed a useful vacuum extractor, a double-ended needle connected with a vacuum bottle.—[48] The Hoffmann-La Roche Chemical Works, Ltd. (7 and 8, Idol-lane, London, E.C. 3), showed their "Allonal," "Sedobrol," and "Somnifaine" hypnotics, and their new synthetic non-toxic purgative "Isacen," which acts only on the intestines and is excreted unchanged.—[50] Evans Sons, Lescher and Webb, Ltd. (56, Hanover-street, Liverpool), had an extensive list of hypodermic ampoules, filled by a machine which ensures accuracy and sterility; "Cascaromat," a concentrated elixir of cascara free from bitterness; standardised "Infundibulin"; "Marrophos," a tonic food; "Purgoids," a safe laxative tablet; "Sexatone" pluriglandular tablets; and Sodium Morrhuate for tuberculosis.—[53] G. W. Carnrick Co. (London agents: Brooks and Warburton, Ltd., 40–42, Lexington-street, London, W. 1) showed their glandular products, including hormotone and trypsogen guaranteed to be made from fresh glands, analysed and standardised, and packed in specially sealed amber glass moisture-proof bottles.—[59] Armour and Co., Ltd. (Queen's House, Kingsway, London, W.C. 2), showed their medicinal products of animal origin, including corpus luteum guaranteed to be prepared from the ovary of the pregnant sow; pig spleen preparation in elixir and hypodermic solutions, for anæmia or mild ganglionic lesions; and oxalised "Thromboplastin" solution; also capsules of "Thyro-Manganese"; and a double-strength 1 c.cm. ampoule of pituitary extract.—[67] Genatosan, Ltd. (Loughborough, Leicestershire), showed their well-known "Genasprin," "Sanatogen," "Formamint," &c., and a range of detoxicated vaccines. This firm have recently been appointed the sole concessionaires in this country for the products of the Pasteur Laboratories.—[73] Sandoz Chemical Co., Ltd. (Bradford), showed "Femergin" (ergotamine tartrate), "Felamine," "Scillaren," "Lobeline," also a new "Allisatin" tablet for tasteless administration of *Allium sativum*.—[81] J. C. Eno, Ltd. ("Fruit Salt" Works, Pomeroy-street, New Cross, London, S.E. 14), had an exhibit of their well-known effervescing saline laxative.—[37] Jeyes Sanitary Compounds Co., Ltd. (64, Cannon-street, London, England), showed their "Cyllin" preparations: Liquid soap guaranteed equal to 50 per cent. carbolic acid; Lano-cyllin, an antiseptic ointment; Jeysol, identical with lysol and making a clear solution. Medical Cyllin has a Rideal-Walker coefficient of 24–26 for *B. typhosus*.

SURGICAL INSTRUMENTS AND APPLIANCES.

[3] Down Bros., Ltd. (21 and 23, St. Thomas's-street, London, S.E. 1), showed a selection of new instruments and modifications of existing patterns, including Cubley's tracheotomy instruments, as used at the M.A.B. hospitals; Ivan Magill's new portable intratracheal apparatus, a recent improvement demonstrated at the sectional meeting; Geoffrey Marshall's portable pneumothorax apparatus; Schoemaker's stomach-crushing clamps and forceps; and their "Up-to-date" operation table with oil pressure pump for raising and lowering, with recent improvements.—[9] The Genito-Urinary Manufacturing Co., Ltd. (64, Great Portland-street, London, W. 1), sole agents for J. Eynard, Paris, in Great Britain and Ireland, showed a series of surgical and optical instruments, including new boilable cystoscopes, made to the pattern of leading surgeons; a large improved diathermy machine with dry spark gap; boilable and non-conducting retractors, and other diathermy instruments; Chevalier Jackson's improved models; Mr. Norman C. Lake's suction apparatus; and specialties in stainless steel by Eynard.—[11] Arnold and Sons (John Bell and Croyden, Ltd.) (50–52, Wigmore-street, London, W. 1) showed a new pedestal operation table on oil-pump base, as supplied to the Cancer Hospital; the "Arnold" high-pressure steam and vacuum steriliser for dressings, with improved radial arm wheel door; an improved urological table and chair combined; the "Mayboil" flexible elastic gum catheters and bougies; a syringe for regional anæsthesia designed by Mr. O. Stanley Hillman, F.R.C.S.; and "Phonophore" stethoscopes.—[22] Mayer and Phelps (Chiron House, 59-61, New Cavendish-street, London, W. 1) showed instruments and apparatus of original design, many in stainless steel; the "Leeds" anæsthetic outfit combining apparatus for nitrous oxide, oxygen, carbon dioxide, open and closed ether and chloroform; a chair for operation work in the upright position; Hammond's combined urological syringe for injecting the anterior and posterior urethra, for local anæsthesia, hypodermic, intramuscular and intravenous injection and lumbar puncture; a novel gag for adenoid and tonsil operations; and an artificial larynx and various forms of speaking apparatus for use after total laryngectomy.—[33] The Surgical Manufacturing Co., Ltd. (83 and 85, Mortimer-street, London, W.1), exhibited a series of instruments, including the "Barton" sphygmomanometer, the "Bard Parker" knife with removable blades; the Boyle-Davis mouth gag; the "Aurora-

scope" throat and ear apparatus; and an improved midwifery outfit.—[15] Messrs. Allen and Hanburys, Ltd. (48, Wigmore-street, London, W. 1), had a large selection of instruments, including a portable Mennell's universal voltage motor pump for blowing and sucking; Mennell's ether mixing apparatus for intratracheal anæsthesia; Howard Jones's mixing apparatus for intratracheal and open ether anæsthesia; Souttar's steam cautery; apparatus for testing the patency of the Fallopian tubes; and a complete set of gynæcological instruments as used by Comyns Berkeley and Victor Bonney; London Hospital catgut; the St. Bartholomew's Hospital pattern operation table with various improvements, including ball-bearing wheels guaranteed not to require attention for ten years; and a series of the latest model Wolf boilable and large field cystoscopes.—[49] Stille (Stockholm, Sweden) exhibited a selection from surgical instruments which the firm has been making from best Swedish steel since 1841. Many were of stainless steel. The British agents are Ogilvy and Co., 20, Mortimer-street, London, W. 1.—[70] The Holborn Surgical Instrument Co., Ltd. (26, Thavies Inn, Holborn-circus, London, E.C. 1), showed daylight surgical lamps for ophthalmoscopy, &c., giving a white light through blue glass; the "Minop" knife with detachable blades and cases for keeping the blades in disinfectant solution; a new sphygmomanometer with unspillable tube and wider mercury column, and a large assortment of stainless steel, including pocket dressing-cases.—[76] John Weiss and Son, Ltd. (287, Oxford-street, London, W. 1), included in their exhibit Ryall's cysto-urethroscope; a cystoscopic lithotrite; new models in ophthalmic instruments, including Bishop Harman's ring adaptable to any forceps, and Harrison Butler's squint instrument.

Among the Special Instruments:—[5] P. H. Zeal, Ltd. (75 and 77, St. John-street, London, E.C. 1), showed their "Repello" thermometer and "Acello" re-setting case; an aseptic glass clinical thermometer, and various other types of recording instruments, including surface thermometers and urinometers.—[13] Rayner and Keeler, Ltd. (9, Vere-street, Cavendish-square, London, W. 1), showed ophthalmic instruments, including a single beam operating lamp and stand; a large model May ophthalmoscope, allowing much more light than small instruments; and Zeiss instruments, including slit lamps and corneal microscopes. They also had a display series of drawings and fundus paintings.—[51] Alexander and Fowler (59A, Pembroke-place, Liverpool) showed the "Constanta" truss, with moulded pelvic band, no perineal strap and control spring to the pad. The special link attachment to the band allows parallelism to the abdominal wall under all conditions.—[25] The Inhaling Drug and Apparatus Co., Ltd. (30, Grosvenor-place, S.W. 1), showed the Spiess-Drager drug nebulising and inhaling apparatus for asthma, emphysema, &c.—[83] Theodore Hamblin, Ltd. (15, Wigmore-street, London, W. 1), showed a number of ophthalmic instruments, including a recently improved Lister perimeter and scotometer; the new Lister hand projection lamp; the 1925 astigmatic chart; a new series of stereoscopic pictures designed to make the promotion of binocular vision more interesting to children; and a selection of ophthalmic drawings by Hamblin's staff of skilled draughtsmen.—[18] H. E. Curtis and Son, Ltd. (7, Mandeville-place, London, W. 1) showed the "Curtis" abdominal support for ptosis and other belts and trusses, and "Kaylene," a pure hydrated silicate of alumina for gastro-intestinal intoxication; it is supplied pure and combined with saline, mint, laxative, and paraffin respectively.—[39] Short and Mason, Ltd. ("Tycos") (Atlantic House, 45–50, Holborn-viaduct London, E.C. 1), showed their "Tycos" sphygmomanometers, both portable and surgery types, standard calibration, self-verifying, jewelled movements ensuring extreme sensitivity in action.

Aids for the Deaf.—[36] General Acoustics, Ltd. (77, Wigmore-street, London, W. 1), showed their latest models in aids for the deaf, electrical and non-electrical, particularly the shell type and the small button type, and the multiple acousticon for large gatherings.—[44] "Ardente Acoustique" (Mr. R. H. Dent) (95, Wigmore-street, London, W. 1) had several new small models, one ear-piece the size of a shilling, and a microphone the size of a florin; also a stethoscope for deaf doctors.—[11] Arnold and Sons (John Bell and Croyden, Ltd.) (50–52, Wigmore-street, London, W. 1) were also showing electrical and non-electrical aids for the deaf from their stock, which includes all makes.

Artificial Limbs.—[40] Chas. A. Blatchford and Sons, Ltd. (90, Clapham-road, London, S.W. 9), showed their new artificial leg, which is held on by suction and requires no harness of any kind; also other appliances for amputations and mutilations.—[43] Pedestros, Ltd. (26, Langham-street, London, W. 1), had a comprehensive display of light metal limbs.

X Ray and Light Apparatus.—[57] Gray and Selby (27–29, Pelham-street, Nottingham) had a demonstration of British-made ultra-violet radiation apparatus, instruments, and microscopes.—[62] The British Hanovia Quartz Lamp Co., Ltd. (Slough), showed a number of patent models, including the water-cooled Kromayer lamp for treatment of small areas and orifices; a standard metal alpine-sun lamp for direct connexion to direct or alternating currents, with greatly improved and simplified action.—[65] Ajax, Ltd. (117, Central-street, London, E.C. 1), showed portable ultra-violet ray apparatus, including tungsten arc lamp, portable poly metallic carbon arc, Sundiray arc, and a table-model mercury-vapour quartz burner apparatus.—[71] The Dowsing Radiant Heat Co., Ltd. (91–93, Baker-street, London, W. 1), showed apparatus for radiant heat treatment, particularly a special tungsten lamp, the "Ultra-Vi," fitted with special glass bulb and screens and suitable for home use, as it can be applied for periods up to 30 minutes.—[6] Kodak, Ltd. (Kingsway, London, W.C. 2), showed X ray negatives made on Eastman "Duplitized" film, including dental negatives, illustrating the new "Bite-wing" system for the early detection of interproximal cavities, and small positive reproductions; and a new method of cholecystography, the sensitising preparation being administered orally or by intravenous injection.

ACCESSORIES AND HOSPITAL EQUIPMENT.

[7] Cuxson, Gerrard and Co., Ltd. (Oldbury, near Birmingham), showed a range of "Sanoid" catgut, sterilised in triplicate; an assortment of surgical and medical plasters, including rubber adhesive strapping on holland for orthopædic work; and the "Zudor" jacket for pneumonia.—[82 and 34] The Thermogene Co., Ltd. (Haywards Heath, Sussex), and the Denver Chemical Manufacturing Co. displayed their well-known products, "Thermogene" and "Antiphlogistine."—[30] Fassett and Johnson, Ltd., exhibited a full range of Seabury and Johnson plasters, dressings, and requisites, including "Mead's" rubber adhesive plaster, "Gold Cross" absorbent cotton, and "Argyrol" silver vitelin.—[61] Manlove Alliott and Co., Ltd. (Bloomsgrove Works, Nottingham), showed a complete range of steam and gas-heated sterilising apparatus for hospital use, especially one with a waterlute for avoiding the collection of steam in the apparatus, and a gas incinerator for small parcels of objectionable refuse.—[64] Messrs. Chas. Hearson and Co., Ltd. (68, Willow-walk, London, S.E. 1), had a general research laboratory exhibit, including all-metal drying ovens, centrifuges, particularly a new high-speed model (3–10,000 revs.) for ultramicroscopic viruses, and the Dartfield illuminator for spirochætes, workable off a house current.—[80] Baird and Tatlock (London), Ltd. (14–15, Cross-street, Hatton Garden, London, E.C. 1), showed laboratory apparatus, including Thompson Chard filter, Stanford's pipette, Ayling's automatic fillers, Garrow's agglutination apparatus, Schuster's respiration pump, incubators, milk sedimentation apparatus, and autoclaves, all made in their own factory at Walthamstow.—[10] Whitfields Bedsteads, Ltd. (109–125, Watery-lane, Bordesley,

Birmingham), showed the "Lawson Tait" special bedsteads for heart cases, for the Fowler position and for steady wheeling and standing.—[12] Hoskins and Sewell, Ltd. (Bordesley, Birmingham), showed the new castor-pad fitting bed which can be wheeled on rubber-tyred castors or lowered on to rubber pads; the Sir Charles Brown Invalid Pan bedstead for bedridden cases; several special beds, lockers and slip-on bed rests; the latter combined with "Burton's donkey" make a useful portable "Fowler" position apparatus.

SPAS AND MEDICINAL AND MINERAL WATERS.

[20] Harrogate drew attention to the recent development of their Nose and Throat and Ultra-violet treatment departments and the careful training of the Bathing Establishments staff.—[31] Buxton has recently instituted a three-weeks' course "Cure Ticket" for £3 3*s.* to dispose of the idea that spa treatment is expensive; there is a new heating installation which, by means of calorifiers, keeps up a steady temperature of 150° F., thus retaining the gas in the water.—[68] Droitwich has extended its hotel accommodation and has introduced freshly distilled water and "Wychia," a saline aperient water.—[74] The Bath exhibit included a number of photographs, old prints, and water-colour drawings and booklets describing the spa treatment and hotel accommodation.—[38] Ingram and Royle, Ltd. (45, Belvedere-road, London, S.E. 1), displayed their bottled products, Vichy Célestins, Contrexéville "Pavillon," Evian Cachat, Carlsbad, Hunyadi János, &c.—[60] W. Gaymer and Sons, Ltd. (Attleborough), showed their Cyder, recommended for gout and rheumatism, and their "Perry," a sweeter pear drink.—[14] Alexander Riddle and Co., Ltd. (58–60, Bancroft-road, London, E.1), showed their vitamin C drinks, Stowers' lime juice, and lemon and orange squash.

FOOD PRODUCTS.

[23, 29, 79] Horlick's Malted Milk Co., Ltd. (Slough, Bucks); Benger's Food, Ltd. (Otter Works, Manchester), and Virol, Ltd. (Hanger-lane, Ealing, London, W. 5), showed their well-known products: Horlick's malted milk food and tablets; Benger's Food and digestive preparations; Virol, Virol and milk, and Virolax.—[28] Oxo, Ltd. (Thames House, Queen-street-place, London, E.C. 4), drew attention to their unseasoned hospital Oxo, meat juice, and endocrine preparations standardised by physiological and chemical methods.—[32] Glaxo (56, Osnaburgh-street, London, N.W. 1), in addition to Glaxo and Glax-Ovo, presented particularly their vitamin D preparation, "Ostelin," for promoting the absorption of calcium and phosphorus while avoiding the intolerance often shown towards other forms of cod-liver oil. Ostelin is also prepared with malt extract and orange juice.—[35] Trufood, Ltd. (the Creameries, Wrenbury, Cheshire and Lever House, Blackfriars, E.C. 4), were showing Humanised Trufood, a spray milk closely analogous to human milk; Trufood Full-cream and Secway, a concentrated and very assimilable form of nourishment.—[45] Cadbury Bros., Ltd. (Bournville, England), had on their stand their different makes of chocolate, and drew attention to their special method of making cocoa so as to bring out the full flavour.—[46] Keen, Robinson and Co., Ltd. (Carrow Works, Norwich), showed "Almata," a complete synthetic food for infants and invalids; Robinson's "Patent" barley, groats, and Waverley oats; and Keen's mustard ointment, designed to take the place of mustard plasters.—[52] Montgomerie and Co., Ltd. (Ibrox, Glasgow), showed "Berina" food for infants and adults and "Berina" malted food, which is largely used in hospitals and is particularly useful for the expectant mother.—[54] Mead's Infant Diet Materials (Brooks and Warburton A.D.S. Co.), Ltd. (40–42, Lexington-street, London, W. 1), showed Mead's "Recolac," a reconstituted milk in which even the salts are prepared so as to correspond closely with human milk; the well-known "Dextri-maltose"; protein milk and milk soup for sick infants; and a biologically standardised and tested Newfoundland cod-liver oil (Empire product) which has little taste or odour.—[69] Brusson Foods, Ltd. (311, Gray's Inn-road, London, W.C. 1), showed Brusson breads for diabetes and a gluten chocolate sweetened with saccharin.—[77] S. Guiterman and Co., Ltd. (35–6, Aldermanbury, London, E.C. 2), showed "Cereal Meal," a combination of cereal, agar-agar, flax-seed meal, and bran, designed to produce large, soft, easy evacuations. They also showed a simple light and heat ray lamp, the "Adjusto Ray."

BOOKS.

The following publishing houses had each a large series of interesting publications, of which only a few can be mentioned. [8] H. K. Lewis and Co., Ltd. (136–140, Gower-street, London, W.C. 1): "Health Legislation," by F. Harvey; "Epilepsy, a Functional Mental Illness," by R. G. Rows and W. E. Bond; Timbrell Fisher's "Manipulative Surgery"; E. M. Brockbank's "Incapacity or Disablement in its Medical Aspects"; L. R. Fifield's "Minor Surgery"; and "The Clinical Examination of the Nervous System," by G. H. Monrad-Krohn.—[17] J. and A. Churchill (7, Great Marlborough-street, London, W. 1): The "Recent Advances" series, including Obstetrics and Gynæcology and Biochemistry; the new edition of Craig's "Psychological Medicine," by Craig and Beaton; a new edition of Sequeira's "Diseases of the Skin," and the "Medical Directory."—[47] The Oxford University Press (Amen House, Warwick-square, London, E.C. 4): Leonard Williams's "Obesity"; Cope's "Treatment of the Acute Abdomen" and his "Early Diagnosis" in third edition; Tod's "Diseases of the Ear," fourth edition; "Pathology and Treatment of Diabetes Mellitus," by Graham, new edition; and a new series of 5*s.* handbooks, including Cameron on "Diseases of Children" and Gibson on "The Heart."—[78] John Wright and Sons, Ltd. (Bristol): Geddes's "Puerperal Septicæmia"; ninth edition of the "Index of Treatment" (Hutchison and Sherren); Carey Coombs's "Rheumatic Heart Disease"; Lawford Knaggs's "Inflammatory and Toxic Diseases of Bone"; "Urgent Surgery," by Felix Lejars; "The Cancer Review," first number; "The British Journal of Surgery," and the well-known "Synopsis" series.—[81] W. B. Saunders Company, Ltd. (9, Henrietta-street, London, W.C. 2): "Pediatrics," by 150 authorities; "Mayo Clinic Collected Papers, 1925"; Bickham's "Operative Surgery"; Berkeley Moynihan's "Abdominal Operations"; Young's "Practice of Urology"; G. A. L. Morse's "Clinical Pediatrics"; and "The Art of Medical Treatment," by F. W. Palfrey.—[58] The Food Education Society (24, Tufton-street, Dean's Yard, London, S.W. 1) showed their publications on dietetics and hygiene, including the popular "Facts for Patriots" series on food values; "The Pudding Lady's Recipe Book," and leaflets such as "The Nation's Health."

MEDICAL AGENCIES.

[11] Arnold and Sons (50–52, Wigmore-street, London, W. 1) had their "Medical Transfer" department represented on their stand.—[55 and 56] The Medical Insurance Agency (c/o British Medical Association, B.M.A. House, Tavistock-square, London, W.C. 1) had their usual literature and were also accompanied by an engineer from Mann, Egerton and Co., Ltd., to advise on all car matters.—[66] The Medical Sickness, Annuity and Life Assurance Society, Ltd. (300, High Holborn, London, W.C. 1), had a representative to advise visitors on matters of life, sickness, and endowment assurance.

MISCELLANEOUS.

[24, 75] Among toilet preparations "Pepsodent," the acid dentifrice, and Kolynos Incorporated (Chenies-street, London, W.C. 1) demonstrated their well-known tooth creams.—[63] The Museum Galleries (53, Short's-gardens, Drury-lane, London, W.C. 2) had an exhibit of engravings, including their "Gallery of 100 Famous Men and Women" and "The Cries of London," after Francis Wheatley, R.A.

Reviews and Notices of Books.

INSULIN.

Its Use in the Treatment of Diabetes. Medicine Monographs, Vol. VI. By J. J. R. MACLEOD and W. R. CAMPBELL, Departments of Medicine and Physiotherapy, University of Toronto. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1925. Pp. 242. 20*s*.

THIS book forms one of the series of monographs on medicine which is being issued in the United States of America and it well maintains the high standard which has been set in the earlier volumes. Prof. Macleod deals fully in the first seven chapters with the physiology of insulin. The history of its discovery is briefly related and the various steps in the manufacture and standardisation of its potency are described. Macleod's recent work has shown that it is possible to keep a completely depancreatised dog alive for a year, but only if insulin be supplemented by raw pancreas by the mouth. Before this was discovered, the animals developed jaundice and died after two to seven months. The raw pancreas promoted fat digestion and was presumably the determining factor. In human beings the acinous portion of the pancreas is rarely affected, so that the use of raw pancreas is not indicated. In the clinical section of the book Dr. Campbell gives a clear account of the mode of treatment in use in Toronto. The beneficial effect of the insulin on the general metabolism is described and a special chapter is devoted to the symptoms and treatment of hypoglycæmia. Dr. Campbell thinks that sugar should always be given to an unconscious patient before either adrenalin or pituitrin is injected lest there should be no glycogen in the liver. He recommends that glucose should be injected intravenously as soon as possible. This is contrary to the practice in England, where the adrenalin is given first and is followed up by either sugar by mouth if the patient responds to treatment or intravenously if he does not.

The principles of the dietetic treatment are clearly set out and the tables for the calculation of the diet are arranged to give most admirable details. The instructions for the use of insulin are well considered; special stress is laid on the importance of keeping the blood-sugar normal. Rules for the guidance of the patient are also included. The bibliography is a model one and will be of value to all students of the subject. The monograph is well indexed.

THE BIOLOGY OF THE PROTOZOA.

By GARY N. CALKINS, Ph.D., Professor of Protozoology, Columbia University. London: Baillière, Tindall and Cox. 1926. Pp. 623. 35*s*.

BROADLY speaking, Protozoa come within the medical purview only because some of them have become adapted to act as human parasites. The practitioner's first duty is to diagnose their presence, his second to control the treatment his patient receives by noting the increase or decrease in their numbers, and his third to be reasonably certain of their final disappearance. There thus has been a tendency to look upon parasitic protozoa almost as a race apart from the ordinary run of free living organisms, and to subject them to intensive study more from the aspect of their morphology—on which diagnosis chiefly rests—than of their biological characteristics. While this is more especially so in the case of the parasitic protozoa, much the same state of affairs is found with regard to free living forms. In other words, our knowledge of the morphological features has reached a very high standard, and we are able satisfactorily to group the organisms systematically.

The distribution of the protozoa in nature, the reactions of the various organisms to their respective environments, and the manner in which they function have received a considerable amount of attention, and much work is still being carried on on these lines. Nevertheless, as Prof. Calkins says in the preface to this book on the Biology of the Protozoa, "there is no common aim, little background and no common point of view through which these many aspects of Protozoa study are woven together in any definite way to make a science of Protozoology." Further, since the conception of Protozoa as unicellular animals has not been accepted by some, who, perhaps, prefer the non-cellular theory, even that common starting-point has been removed, and accordingly we are forced back to the fundamental principles of biology on which to build our scientific structure. To assist in the correlation of these various features Dr. Calkins has given us, from out of his ripe experience of 30 years, both as a teacher of the subject and also as a research worker, a volume full of learning and pregnant with suggestion. Its arrangement has evidently been the subject of much care, each section leading gradually and clearly up to the next. In the introductory chapter the general organisation of the protozoan body is described, also the theories concerning the structure of protoplasm and the nature of the inclusions, chromatoid bodies, volutin granules, and such-like, found therein. The second chapter deals with the nuclei of Protozoa, first as regards the composition and nature of the various substances, such as chromatin, linin, and plastin, which go to form the complete whole, and later with the kinetic elements. For the central body within the nucleus, usually called the karyosome, which may or may not function as a kinetic element, the author prefers the term endosome, and, in those instances where the kinetic nature of the structure has been proved definitely, the term endobasal body.

Before discussing more particularly the special morphology and classification in relation to the four main groups—the Mastigophora, Sarcodina, Infusoria, and Sporozoa—to each of which a chapter is devoted, the author treats of such questions as general physiology, structural differentiation, and reproduction. In the chapter on general physiology we would draw especial attention to the section on "irritability," which is, as Calkins says, "the underlying biological principle." Indeed, while every section of the book may be taken as a unit complete in itself, containing all the essential information and salient facts, it is necessary to study the whole to appreciate the manner in which the author has developed this hypothesis in order to give cohesion to a large number of more or less disconnected facts. This concept becomes gradually more and more outstanding as one approaches the end of the book, and is well summarised in the chapter on vitality. It should be clearly understood that in this book the human parasitic protozoa are not dealt with in detail; indeed, they are mentioned only to exemplify some point of function or structure. Its medical interest, therefore, is indirect, but the contrast between the functioning of organisms under dissimilar circumstances, parasitic and non-parasitic, is illuminating and makes appeal to everyone interested in cytology, physiology, zoology, and protozoology.

The book is beautifully illustrated and the copious references to the literature are well presented.

RADIOLOGY.

Lehrbuch der Strahlentherapie. By Prof. HANS MEYER (Bremen). Berlin: Urban and Schwarzenberg. Band I. With 362 illustrations and six coloured plates. Pp. 1112.

RADIATION therapy has led up to an enormous literature during the past few years, scattered through the pages of the various Continental, English, and American periodicals. It has also inspired some good text-books, but few as good as the volume under review. It deals with the physical and biological principles of radiation therapy in its widest sense, including natural sunlight, artificial sunlight, X rays, and radium, and may well become the standard text-book on the subject as far as this is possible when

constant research, the improvements of technique, new methods, and a daily increasing volume of clinical data prevent the attainment of finality. Prof. Meyer has presented, in a reasonable compass, a volume of facts for which the radiologist would have had to search among an unmanageable quantity of periodical literature. As an instance, the section by Heineke, completed after his death by Perthes, on the biological action of X rays and radium, comprises some 70 pages of text, while the references for this article alone fill eight pages. Despite its fullness, the book is well proportioned. Sunlight treatment and ultra-violet ray occupy about one-quarter of the whole book. There is no undue insistence on newer methods, and the special section on the principles of deep therapy, by Prof. Dessauer, occupies only 40 pages.

It is interesting to note that in Germany, as in this country, empirical methods of ultra-violet dosage are used in practice. Dr. Keller, dealing with this subject, does not neglect the scientific methods of dosage; but he goes even more fully into the practical difficulties which occur, and the precautions to be taken in dosage by time after empirical determination of the erythema dose. We note, incidentally, the omission of any allusion to Dr. Leonard Hill's methylene method. This section, together with Dr. Hausmann's article on the biology and pathology in relation to ultra-violet radiation, should alone warrant the inclusion of the work in the library of every radiological department or hospital undertaking this work. Of special interest is the section on the results of sensitisation by dyes and by organic hæmatoporphysis (Meyer Betz). The section of the technique of treatment by radio-active substances is contributed by Dr. F. E. Simpson, of Chicago. G. Holzknecht, M. Holthusen, O. Strauss, A. Lorey, and Dr. G. Bucky also contribute. The last named has a section on the radiologcal aspect of radiation treatment, and a recent criminal prosecution in Germany following an overdose of deep therapy indicates the necessity for such an artiele. It should be noted that, though Bucky places "underdose" second only to "overdose" in his list of technical faults, he admits that his own experience and that of his colleagues do not support the theory that underdosing leads to irritation and injurious growth of a malignant tumour. The belief in the irritation dose appears to be dead in Germany as elsewhere.

This volume, as has been indicated, deals chiefly with the theoretical and technical side of radiation therapy. Together with its companion volume, dealing with the clinical aspects of the work, it covers the ground very completely.

La Cystographie. By H. BLANC and M. NEGRO. Paris: Masson et Cie. 1926. With 108 figures. Pp. 89. 6*s.* 8*d.*

THE examination of the bladder by means of radiography after the organ has been filled by some opaque fluid is now an important method of diagnosis and a valuable adjunct to cystoscopy. Indeed, as the authors point out, there are certain lesions which only this method of examination is able to demonstrate.

The various methods of technique which have been employed by different workers and the wide range of opaque fluids available are discussed and contrasted, and a clear account of the author's method is included. A description of the appearances of the normal bladder filled with opaque fluid as seen from various angles, at varying degrees of distension, is particularly useful, as also is the section in which the appearance of the male, female, and infant bladders are contrasted. The authors rightly lay stress on the value of this method in differentiating doubtful radiographic shadows in the urinary tract and in showing the presence of non-opaque stones; many examples are also given of this method of ascertaining the number and size of bladder diverticula. A short chapter has been included on pneumo-cystography, a method which the authors, in common with most workers, have not found as useful as the employment of opaque fluid.

The book is profusely illustrated; in fact, a large part of it constitutes an atlas of the radiographic appearances of the normal and pathological bladder. The pictures are well reproduced, and where any confusion of shadows is present small explanatory line drawings are inserted.

PHYSIOLOGY OF THE CONTINUITY OF LIFE.

By D. NOËL PATON. London: Macmillan and Co. 1926. With 78 text-figures. Pp. 226. 12*s.*

PHYSIOLOGY mostly concerns itself with the working of the existing individual. The professor of physiology in the University of Glasgow here publishes a course of lectures which he has given his students dealing with life as a continuous transmission, not, as he says, of structure but of modes of molecular motion. He is dissatisfied with the dogmatic teaching of the biologists on such topics as spontaneous generation, Mendelian heredity, the functions of chromosomes, and the inheritance of acquired characters. *Nullius in verba magistri* is his motto, and he urges his readers to have open minds and examine the evidence for themselves. It is always refreshing and valuable to hear what a trained thinker has to say about a subject which is allied to his particular discipline, and his remarks on "hereditary inertia" and the possibility of mistaking quantitative for qualitative differences will be a useful alterative for those to whom a gene is as real as a penny. But in a book of this size it is, of course, quite impossible to set out the evidence on all the great topics he deals with, and in one instance, at any rate (pp. 47, 106), Prof. Noël Paton appeals to authority as flagrantly as any popular compiler. The last three chapters on pregnancy, parturition, and lactation are quite scrappy, and there has been a good deal of carelessness in finishing off the details; we note *Parage* for *Pararge* (p. 30), Hepper for Heffer (p. 150), von Vries for de Vries (p. 17), and Noël Paton for Paton, Noël, in the index.

A QUAKER ADVENTURE.

By A. RUTH FRY, Hon. General Secretary of the Friends' War Victims Relief Committee, 1914–23. With an Introduction by Viscount CECIL OF CHELWOOD. London: Nisbet and Co., Ltd. 1926. Pp. 389. 10*s.* 6*d.*

WE do not know whether the Society of Friends has a motto, but a most suitable one would certainly be that passage from Isaiah: "They shall build the old waste places: thou shalt raise up the foundations of many generations; and thou shalt be called, The repairer of the breach, The restorer of paths to dwell in." For this book is a record of voluntary work undertaken in six different countries of Europe—France, Serbia, Russia, Austria, Poland, and Germany.—work which entailed difficulties, dangers, hardships and exposure to illness and infection. And all this not undertaken by medical men alone, to whom such risks are part of their ordinary work, but by civilians of all ranks, united by love for their fellows and spurred on to work because they knew that they were doing right. One of them, says Miss Fry, "described our achievements as second-class work done by third-class people," a statement with which we cannot agree. The activities of the Mission dealt with reconstructing houses, feeding the starving, supplying cattle, poultry, fruit trees and agricultural seeds and plants, bees and goats, and lastly, offering medical and surgical aid to both men and animals. The Mission was well received everywhere. Though as pronounced pacifists the workers were often suspect, yet the excellence of their work soon overcame any doubts. Instances of wanton destruction by the Germans were all too common during the war, but Miss Fry tells one charming story on the opposite side.

In the Marne district lived a lady who possessed a small but valuable collection of pictures. She was driven out of her house by the invasion, but on her return found it intact, but no pictures. Eventually she found them behind a curtain, together with the following note, written in French by a lieut.-major of Hesse Darmstadt: "I congratulate you on your Moreau and sundry other small pictures. As an artist myself, I know their value and have put them on one side to preserve them."

The book is one to be read at leisure, and the various deeds therein described are to be wholeheartedly admired.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXIX. No. 3. Pp. 225–324. July, 1926.—The Enterococcus, by S. V. Bagger (Copenhagen). The intestinal streptococcus known to the French as the enterocoque, but little recognised in this country under that name, is defined from a study of 150 strains. It differs from other streptococci mainly in its high heat resistance and its ability to grow in bile media. —An Epithelial Tumour in the Spleen of a Rabbit, by N. D. Ball (London). A curious formation of what appears to be intestinal epithelium which presumably represents some developmental misplacement.—The Nature of the "Oat-celled Sarcoma" of the Mediastinum, by W. G. Barnard (London). The tumour is really a carcinoma of lung.—Polyarteritis Acuta Nodosa, by J. Gray (Aberdeen). A characteristic example of this curious condition, apparently following an obscure infection of the leg.—The Receptor Structure of *Vibrio choleræ* (*V. comma*), with Observations on Variations in Cholera and Cholera-like Organisms, by I. Balteanu (London). Like the typhoid-paratyphoid group, the cholera vibrio contains two series of antigens, heat-stable and heat-labile, and probably representing the somatic and flagellar parts of the bacillary body. The author also describes an aflagellar variant growing in opaque colonies in which the heat-stable antigen was alone present in approximately normal amounts. This thorough study should be consulted in detail by those interested in bacterial variation.—The Third Agglutinating System in Human Blood, by F. W. Simson (Sheffield). The observations of Guthrie and Huck and of others on the existence of a third agglutinin and receptor (C) in human blood are fully confirmed. Their existence is rarely demonstrable by direct agglutination, but absorption experiments show that either the agglutinin or the agglutinable substance is present in the serum or red corpuscles respectively of a large proportion of persons. This third element makes no difference to the ordinary system of grouping; its existence, however, strengthens the conclusion that direct cross-agglutination between the proposed donor and the recipient should be practised in all transfusions.—The Nutritive Requirements of Growing Cells, by T. B. Heaton (Oxford). Up to about the eleventh day of incubation the tissues of chick embryos grow well in a saline medium; older tissues require growth-promoting substances in addition, of which the author distinguishes two—one necessary for fibroblasts and one, abundant in yeast and possibly vitamin B, necessary for epithelia. There is, too, another substance, present in yeast and in many adult mammalian organs, which inhibits the growth of fibroblasts.—Complement Fixation with Bilharzia, by A. W. Turner (Melbourne). Anaphylactic experiments do not confirm Le Bas's suggestion that Fairley's extract for diagnosing bilharzia infection contains protein.—Carcinoid Tumour of the Ileum with Metastases, by C. E. Dukes and P. Lockhart-Mummery (London). The basal-celled cancers of the ileo-cæcal region seldom give rise to secondary growths, which in this case were found in the peritoneum, liver, and regional lymph glands.—The Influence of Locally Injected Indian Ink on the Intracutaneous Response to Vaccinia and Other Viruses, by J. C. G. Ledingham (London). Occupation of the reticulo-endothelial system by Indian ink much diminishes or prevents the local reaction to vaccinia virus, streptococci, and diphtheria toxin.—A Combination of Bismuth and Sodium Sulphite Affording an Enrichment and Selective Medium for the Typhoid-paratyphoid Groups of Bacteria, by W. J. Wilson and E. M. M'V. Blair (Belfast). Another of Prof. Wilson's useful pieces of technique.—Proceedings of the Thirty-third Meeting of the Society.—Lamb Dysentery, by T. Dalling (London). The disease, in places where it generally kills 20–30 per cent. of the new-born lambs, may be almost entirely prevented by dosing the lambs with a mixture of *coli* and *welchii* antisera or, more conveniently, by immunising the pregnant ewes with *coli* vaccine and a *welchii* toxin-antitoxin mixture.—Aminostyryl Quinoline and Aminoanil Quinoline Compounds, by C. H. Browning, J. B. Cohen, S. Ellingworth, and R. Gulbransen (Glasgow and Leeds). These new trypanocidal agents have a powerful curative effect on mice and rabbits infected with *T. brucei*; they are not suitable for intravenous injection.—The Different Immunising Values of Vaccines Made with Smooth and Rough Forms of Bacteria, by J. A. Arkwright (London). The smooth form of paratyphoid A is more virulent and makes a better vaccine than the rough form.—The Value of Taurine for Promoting the Growth of the Gonococcus, by J. Gordon (Leeds). The effect is attributed to a lowering of surface tension and a concentration of the taurine on the surfaces of the bacilli.—Immunity Produced by the Schick Test, by R. A. O'Brien (London). The minute doses of diphtheria toxin used in Schick tests are capable of rousing an active immunity.—The Histological Criteria of Ulcer-Cancer of the Stomach, by M. J. Stewart (Leeds). The important evidence of chronic ulceration is destruction of the muscular coat; the pitfall in the diagnosis of carcinoma is the misinterpretation of misplaced epithelium which is much more common in the stomach than is supposed. Of 260 stomachs removed surgically, 163 showed simple chronic ulcer, 80 cancer only, and 17 both.

Reports and Analytical Records.

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Carbohydrates, altered starch, hemicellulose, &c.	74·8	73·6
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Ash	1·8	2·1
Fat	1·3	1·0
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[*See also pp.* 25 & 32.

THE LANCET.

LONDON: SATURDAY, AUGUST 7, 1926.

SCIENCE AND THE STATE.

THE PRINCE OF WALES has been up and down the world a good deal, and he has kept his eyes open. And, as he told the British Association at Oxford in his presidential address on Wednesday evening, if a man does that he cannot help picking up a certain amount of information. The tale he tells of his experiences and impressions will vary with his audience but we hardly think that it was merely in compliment to his hearers that he devoted his speech to science, progress, and the State. Rather we believe that he was glad to have the opportunity of affirming in sympathetic surroundings his conviction of the high importance of scientific method and scientific knowledge to the needs of civilisation to-day. Everywhere, he says, as an onlooker he has seen the same thing—in factories, mines, education, health, agriculture, transport, housing, and war—that progress consists in applied science, and that it is on the sincere pursuit of knowledge that man must depend to keep and improve his control over his surroundings and so maintain his frail body in a naturally unfriendly environment at the top of the biological hierarchy. If such is the truth—and it can fail to be true only in so far as it does not take into account the whole of human life—the relation of the State to scientific work plainly becomes a matter of as much moment as any of its other organised activities, and the PRINCE traced in a most interesting way the development of this connexion, slowly and tentatively during the nineteenth century, quicker in the twentieth, and then with a rush which got the impetus of the war behind it and gave us the Medical Research Council, the Committee for Scientific and Industrial Research, the Development Commission, the National Physical Laboratory, and all the other outward and visible signs of the change in the heart of Whitehall. Such is the present development of the ideas put forward by DAVID BREWSTER when he was President in 1850 and urged again from the chair by the PRINCE CONSORT in 1859. If he had lived we may be sure that PRINCE ALBERT would have given a large share of his life of laboured toil to procuring the diffusion of useful knowledge of which the invention of the 1851 Exhibition was a practical example. We can trust that the present President will not let his interest flag with his year of office and that he will use his influence for the promotion of that natural knowledge of which he recognises the value so well.

When the Association met in Oxford in 1832, KEBLE and others were horrified that honorary degrees should be conferred on some of the famous men who came to the meeting. When the Museum was built 70 years ago, it was not with the unanimous approval of everyone. But this feeling of antagonism, this strain toning down to uneasiness, has now gone or almost gone, and in few universities is natural science viewed more sympathetically and reasonably than in Oxford; indeed, it seems sometimes as if the humanities understood science better than science understood the humanities. This reconciliation has not been brought about by these aspects of scientific work which are the main theme of the PRINCE'S speech, the complement of which may be found in Dean INGE'S Fison Memorial Lecture at Guy's Hospital. Harmony has come not by realising that science enables us to fly to Amsterdam for afternoon tea, to listen to the opera on the sofa, to have a tolerably perfect apple to eat on any day of the year, but by perceiving that in its larger movements it has all the æsthetic, cultural, and spiritual value of literary studies. The Victorian comparative anatomists and the Georgian physicists developed conceptions at the intellectual level, of the educational value, and with the emotional appeal of Greek and Latin literature, philosophy and history. Lately philosophers and mathematicians have found that their subject-matters actually overlap. And natural science has won its recognition not because it is requisite for the body, but because it is necessary for the soul, and equally with the older disciplines helps men to get nearer to their ultimate goal of goodness, truth, and beauty. So the dialectics of WILBERFORCE and HUXLEY, which appear to be all that anyone recalls of the second Oxford meeting in 1860, seem to us nowadays rather cheap and wholly beside the point. The "Origin of Species" has now settled into its place in our mental fabric. By the time the fifth Oxford meeting is held people at large may be clever enough to apprehend the revolution of relativity. What will the presidential address then be about?

COMBINED ANÆSTHESIA IN ABDOMINAL SURGERY.

THE inter-sectional discussion on anæsthesia at the recent meeting of the British Medical Association in Nottingham, reported on another page, was remarkable for the number of surgeons who took a leading part in it. Prof. FINSTERER, whose masterly review covered in turn the fields of general anæsthesia, of regional anæsthesia, and of combined methods, made good his point that though of much general utility, ether and chloroform have serious defects as routine anæsthetics. They both cause a fall in blood pressure, they do not protect the brain efficiently from afferent impulses, they may lead to cellular degeneration in the liver, kidneys, and other parenchymatous organs, and they invite the onset of pulmonary complications. From many of these defects nitrous oxide gas is free, and in America especially it has been used on an enormous scale; in Austria its use has been abandoned on account of the expense, and ether is employed by Viennese surgeons when a general anæsthetic is indispensable. Recent years have, however, witnessed a remarkable development in regional methods, and these have now reached such perfection in Vienna that practically any operation can be carried out painlessly by their means. Prof. FINSTERER gave the strength and quantity of the novocaine solution generally employed. By their use afferent impulses are so completely blocked that the patient does not suffer from post-operative toxic disturbance. When, as in an extensive laparotomy, it is essential for the peritoneum of the posterior wall as well as of the anterior to be anæsthetic, this is effected either by injection of the mesentery, which even under genera

anæsthesia may be found advisable for the sake of diminishing operative shock, or by means of splanchnic anæsthesia. In this the region of the semilunar ganglia is infiltrated with novocaine before operation from behind by the method of Kappis, or after the abdomen has been opened by the method of Braun. The former, which has obvious advantages, has already been tested by English, French, and American surgeons, whilst in Vienna Prof. FINSTERER has an experience of each method in over 800 cases. The statistics which he presented were sufficient proof of the brilliant results obtained, including as they did many operations of the first magnitude, carried through without the use of general anæsthesia. One complicated gastrectomy occupied five hours, at the end of which time the patient left the theatre carrying on a lively discussion with the surgeon. Continuous observation of the blood pressure is a useful criterion by which to determine the continuance of any operation, the pulse-rate being taken into account at the same time, a point which was emphasised in the discussion by Dr. C. W. MOOTS, of Toledo, U.S.A., who was also a strong advocate of nitrous oxide. While the audience was greatly impressed by the Vienna experience, it will take much persuasion to convince surgeons in this country that the final word is not with the combined methods which relieve both patient and surgeon of the anxieties of having a conscious subject, and which abolish at the same time those afferent impulses which CRILE and other workers have shown to play such an important part in the production of surgical shock. Nitrous oxide inhalation combined with splanchnic or parasacral injections should enable any abdominal operation to be carried out with safety and convenience, especially if the rectus muscle is infiltrated at the commencement. The experience of those who have used the combined methods points to a facility in technique for the operator, a degree of safety for the patient, and an absence of later complications, such as is unknown with the older methods even in the most skilled hands. The newer methods, however, involve a coördination between surgeon and anæsthetist, which can only be reached by long practice. The Nottingham discussion will do much to make this coördination more common than it is at present.

FOOT-AND-MOUTH DISEASE INFECTION.

A FARMER was fined £15 at Crewe on July 2nd for allowing foreign meat wrappings to come in contact with the live-stock on his farm. This was an offence against the Foot-and-Mouth Disease (Packing Materials) Order made last November. Clause 2 of the Order enacts that no cloth, wrapping, sacking, or other material which has been used for the wrapping of meat, meat products, offals, or other parts of a carcass shall be brought into contact with any animal in Great Britain unless and until it has been boiled or otherwise thoroughly sterilised after being so used. The maximum penalty is a fine of £20. An outbreak of foot-and-mouth disease occurred at the defendant's farm, and an inspector of the Ministry of Agriculture who visited him discovered that the farmer also kept a grocery business in Crewe and had bought large quantities of bacon from Denmark, Poland, and Holland. The wrappings from these bales of bacon were taken from his grocery establishment and placed in an open shed on the farm to which his pigs had access. He had also mixed imported bacon with the pig's food. It was further stated at the police-court that, after the outbreak on the defendant's farm, cattle on an adjoining farm contracted the disease. A few days later there was a third outbreak, involving the slaughter of 119 head of cattle, and the defendant admitted he had lent some harness to the farmer who owned these animals.

A question about this prosecution was addressed on July 8th to the Minister of Agriculture in the House of Commons, Mr. W. THORNE asking whether the Minister was aware of the case and whether he would undertake to revise the existing prohibition so as to make it applicable only in reference to bacon imported in wrappings and pigs with hair on. Mr. GUINNESS, in his reply, explained the object of the Order. Foreign meat and bacon may itself be free from disease, but, because it is packed in places where live animals are received, the wrappings may become contaminated after the meat is packed. The Minister went on to say that, if the Order had been obeyed in the Crewe case, it was possible that that particular outbreak would never have occurred. He therefore saw no reason to modify the existing prohibition on the entry of fresh carcasses into this country from the continent. He added that he intended to give the widest publicity to the Crewe conviction in order to call the attention of stock-owners to the Order, and the course thus pursued is commendable and even necessary when the grave trouble and expense to the community are remembered which follow the occurrence and repression of this pestilence. On July 12th Mr. THORNE asked the further question whether, before issuing a general embargo against pork imports from the Continent, any inquiry was held as to the possibility of distinguishing between pork as imported for the last three years to the London meat market and pigs unscalded and unscraped, such as were alleged to have caused foot-and-mouth disease in Scotland. The Minister replied that scalding and scraping of a pork pig does not destroy the virus; the scraping off of the epidermis which follows the scalding merely makes the disease more difficult to detect.

It may be mentioned that the defendant and his wife were also fined £1 for using a public footpath which had been closed in consequence of the outbreak. This penalty shows what unusual measures have been required and have been taken in order to restrict the spread of foot-and-mouth disease. Under Clause 8 of the Foot-and-Mouth Disease (Infected Areas) Order of 1924 an inspector of the Ministry or of the local authority can prohibit entry into a field, shed, or other place in an "infected area" notwithstanding the existence of any footpath or right of way. Doubtless a good deal of publicity will be required in agricultural communities if such regulations are to be observed and enforced.

PROFESSOR TEISSIER.

WE are happy to correct the error made by one of our Paris correspondents in announcing the death of Prof. Teissier, medical chief of the Claude Bernard Hospital in Paris. Prof. Pierre-Joseph Teissier is, on his own showing, alive and active in his devotion to the study and teaching of the nature of infectious disease. The incorrect report was based upon a confusion of his name with that of his late uncle, Prof. Louis-Joseph Teissier, of Lyon, and we may express the hope that the distinguished nephew, who is still in the prime of life, has many years before him to continue the bedside demonstrations which form so useful a part in the education of French students of medicine.

Annotations.

"Ne quid nimis."

SCHOOL-BOY DIET.

THE science of dietetics, even allowing for the impetus given by the new knowledge of accessory food factors, has not kept pace with recent advance in other branches of medicine. Practically all the dietaries in use at institutions and large communal centres, no less than in individual homes where feeding is not simply haphazard, are based on standards hallowed by custom alone and based on unproven or insufficient data. Few observations in the literature of nutrition are comparable in experimental validity with Dr. Corry Mann's report just issued[1] by the Medical Research Council. While the importance of milk as an item in the diet of children has long been widely recognised, it is nevertheless startling to learn that the addition of one pint of milk a day to a diet which by itself satisfied the appetite of growing boys could convert an average annual gain of weight of 3·85 lb. per boy into one of 6·98 lb. per boy, and an average increase of height from 1·84 inches per boy to 2·63 inches per boy, and that coincident with this striking increase in weight and height the boys were "obviously more fit than those in the other groups." The investigation was carried out during the four years beginning December, 1921, at a colony of some 500 boys housed in a model settlement of the villa type, with 30 to 35 boys in each house. The conditions for a controlled experiment were ideal. The institution is situated in a healthy spot some eleven miles from London. Sleeping and living accommodation are excellent, as well as the control and discipline of the boys. Three weeks' leave of absence are allowed in August and 10 days at Christmas, but only a few of the boys availed themselves of it, so that for the most part there was no break in the observations upon nutrition and growth during a considerable period of the school age, amounting in some cases to a continuous residence of four years without any disturbing social or environmental factor. The boys, who are all of foundling type from the South of England, were examined to exclude the possibility of latent or active disease and were graded A1 to B3, equal numbers of the same age and grade being assigned as far as possible to the various houses. A preliminary observation from December, 1921, till March, 1922, was maintained upon the boys in order to demonstrate that, among other things, the basic diet was of adequate physiological value, which is defined in the report as "one which provides the necessary energy for basal metabolism and excretion loss besides additional calories for the minimum requirements of growth and activity."

The report sets out in its entirety the daily basal diet of the boys with the daily and seasonal variations, the calorie value of each ingredient and each portion, and the relative proportions of proteins and fats (animal and vegetable) and carbohydrates. The average number of calories per day per boy was 1916, each boy receiving protein, fat, and carbohydrate in the proportion of 13 : 18 : 68. Dr. Mann suggests that while this distribution compares favourably with the dietary of working-class homes, a better proportion would be 15 : 35 : 50. Control of the basic diet was maintained by weighing maximum and minimum samples at the table, disregarding the total amounts issued from store. The samples taken were then subjected to skilled analysis. Sixty-one boys who received only the basic diet of the village gained an average of 3·85 lb. per boy, and grew an average of 1·84 inches per boy during 12 months, and these average increments were maintained in 38 boys who remained under observation for two years. Mere increase in weight and height was not considered enough to establish the existence of good general health, but full clinical examinations were systematically made on each boy. On these findings the basic diet appeared to be of adequate calorie value, for the control of the diet was intimate, individual idiosyncrasy becoming negligible when dealing with such numbers, and the length of the investigation levelling any seasonal variation. The object of the research was how to discover whether increase in height and weight could be obtained best by giving extra calories—e.g., by adding sugar or fat, or by giving fat with vitamin, or by giving vitamin alone, or whether the biological value of the diet could be readily enhanced by giving an additional ration of animal protein or by giving milk which supplies so many factors in an easily assimilable form. Forty-one boys received a ration extra to the basal diet of 1 pint (388 calories) of fresh cow's milk—pasteurised and homogenised, and these boys gained an average of 6·98 lb. per boy, and grew an average of 2·63 inches per boy in 12 months. Twenty-three boys who were under observation for two years gained an average of 13·17 lb. per boy, and gained in height an average of 5·21 inches per boy. It is remarked that these boys could be picked out by a casual visitor as being so obviously more generally fit, and there was a complete absence of illness among them during a period when in the other houses there was a higher sick-rate than usual. Twenty boys received a daily addition of 3 oz. of castor sugar (350 calories), and gained an average of 4·93 lb. per boy, and grew an average of 1·94 inches per boy in 12 months. Twenty-six boys received an additional ration of 1¾ oz. of grass fed New Zealand butter (387 calories)—this butter had a uniformly high vitamin A content as tested on rats by Dr. K. H. Coward in University College; these boys gained an average of 6·30 lb. per boy, and grew an average of 2·22 inches per boy in 12 months. Sixteen boys received an additional ration of 1¾ oz. of vegetable margarine (379 calories)—Dr. Coward reports that rats required ten times the amount of this vitamin deficient margarine to produce results comparable with New Zealand butter; these boys gained an average of 5·21 lb. per boy, and grew an average of 1·84 inches per boy in 12 months. Thirty boys received ¾ oz. of edible casein (65 calories) as an additional ration—this approximately doubled the amount of animal protein in the basic diet—they gained an average of 4·01 lb. per boy, and grew an average of 1·76 inches per boy. Twenty-six boys received in addition to the basic diet ¾ oz. of fresh watercress; they gained an average of 5·42 lb. per boy and grew an average of 1·70 inches per boy in 12 months.

Dr. M. Greenwood and Miss E. M. Newbold have statistically analysed these results, and they state that "the general concordance of the results in the different groups inspires confidence in their stability in spite of the small numbers in some of the subgroups." They conclude that "the milk and butter groups both show definite excess increase in weight over the basic group, and of the same order but slightly higher for the milk group . . . . the milk group shows a definite excess growth in height over the basic group . . . . the excess growth of the butter group over the basic is not significant and is only one-third that of the milk group." This eminently practical research clearly shows that an accepted diet was deficient in full biological value. The striking result obtained was not due to the relatively small increase in calorie value, but to the specific qualities of milk as a food, and while we can await with patience the decision as to what precise factors caused this result, the immediate lesson to be drawn from the report is the necessity for finding trustworthy standards of growth and nutrition.

[1] H. C. Corry Mann: Report on Diets for Boys during the School Age. Medical Research Council. Special Report Series, No. 105. H.M. Stationery Office. 2s. 6d.

SPINAL AND PERIPHERAL FORMS OF EPIDEMIC ENCEPHALOMYELITIS.

SOON after epidemic encephalitis became recognised, the suggestion was put forward that certain cases of myelitis and even of polyneuritis should also be attributed to the same virus. Such cases are not common, however, and when the signs of encephalitis have not been definite the attitude of physicians in this country towards the ætiology has generally been one of cautious agnosticism. Abroad, and particularly in France, a relationship has been more freely acknowledged, and Cruchet and Verger[1] now claim to have encountered in their own experience no less than 39 cases of myelitis, radiculitis, or polyneuritis which they regard as anatomically inferior forms of the same disease. Of these, 28 were cases of myelitis, and the authors divide them into four groups according to whether the symptoms indicated that the spinal infection was anterior, lateral, posterior, or diffuse. The first group closely resembles the commoner acute anterior poliomyelitis, but may be accompanied at the onset by somnolence and diplopia. The spines corresponding to the inflamed segments of the cord may be tender; pain in the affected limbs is the rule, as in poliomyelitis in the adult, and muscular atrophy sets in rapidly; the muscular affection may at first be widespread, but there is a tendency to gradual recovery, and after a few months cure of the paralysis may be almost complete; the cerebro-spinal fluid may be normal or may show an increase in its sugar content and a slight lymphocytosis. The lateral or spastic type may for a time resemble amyotrophic lateral sclerosis, but unlike that disease, it has the same tendency to regression as is seen in the anterior group. The posterior type resembles an acute tabes. There are lightning pains, feelings of constriction, sensory changes, sphincter paralysis, and great incoördination in all limbs; but the pupils preserve their reaction to light, the Wassermann reaction is negative and the sugar content of the cerebro-spinal fluid is increased; in some cases transitory diplopia attends the onset; the course is usually towards recovery, but involvement of the bulb may cause death in the acute stage. The diffuse cases share the features of the other three groups and are characterised by remarkable transformation in their symptoms during the evolution of the disease. One case, diagnosed at the beginning as polyneuritis, became spastic nearly a year later and finally recovered; in the cerebro-spinal fluid the sugar was increased, the Wassermann reaction was negative, and there were 2–3 lymphocytes per c.mm. Other cases resemble the better-known forms of transverse myelitis, but have a greater tendency to recovery; the symptoms, even when there is complete flaccid paraplegia, may completely disappear after six months or more. The cases diagnosed as nerve-root inflammation or radiculitis numbered six. They were characterised by persistent dull shooting pains brought on by effort, or by coughing, sneezing and the like, and usually believed to be caused by muscular rheumatism. The symptoms ceased after six or eight weeks. In spite of vague ocular disturbances at the beginning in a few, the evidence of encephalitic infection in these cases is extremely slender. Five cases of polyneuritis were ascribed to the same infection, but Cruchet and Verger themselves admit that it is very questionable whether the virus of encephalitis ever causes inflammation of the peripheral nerves, while sparing the central nervous system. In regard to polyneuritis and radiculitis, the report does not carry conviction; in regard to myelitis, more might have been said of the evidence on which the supposition of identity of infection depends. A case of myelitis in which there is no clear evidence of another cause may be regarded as due to the infective agent of epidemic encephalitis if it occurs at a time when that disease is rife and if it is accompanied at the onset by somnolence and diplopia or has been recently preceded by these symptoms; the assumption is strengthened if the clinical picture produced differs materially from the usual pictures of acute anterior poliomyelitis and of transverse myelitis.

[1] Presse Médicale, June 12th, p. 737.

JOURNÉES MÉDICALES DE PARIS.

Journées Médicales are gatherings of doctors which differ from ordinary congresses in that they are for instruction rather than dispute. The idea originated in Belgium under Réné Beckers, and in Brussels 16 of these functions have taken place already, and their popularity is steadily increasing. In France they are also an established institution and Journées Médicales were held at Toulouse in 1924 and 1925, as well as at Tunis and Casablanca. They have always been well attended, and it is not surprising that the idea has now been taken up in Paris, where there are immense resources of hospitality and where a large staff of teachers, both official and private, is available. The meeting held from July 15th to 19th, of which a brief account appears on page 303, was the first of its kind in the capital, and was opened by the President of the Republic in the presence of the Ministers of Education and Commerce and diplomatic representatives of many foreign powers. Its purpose was definitely utilitarian and practical, as was indicated by Prof. Widal, President of the Congress, in his opening address. The object of the Journées Médicales, he said, was to enable medical men to meet together from time to time and to gain as quickly as possible the teaching needed to bring their medical knowledge up to date. The progress of the last few years had been so rapid that only with difficulty could the practitioner keep himself in touch with the methods of investigation and of treatment which were continually transforming medical and surgical practice. Certainly the doctor had his books; he could read articles in the medical journals, and he could attend the discussions of learned societies; but how could he judge the value of so many different methods, and how could he recognise immediately the advantage to be drawn from them? This is a fair statement of the case for post-graduate education, and the Journées Médicales differ only from British post-graduate courses in the scale on which they are arranged. Conferences and demonstrations were held in many Parisian hospitals and laboratories in such a way as not to clash with one another in the time-table, and as a complement to these lessons and lectures there was an exhibition at the Grand Palais where the practitioner might revise his knowledge of medical and surgical apparatus. Very many French doctors attended, but the gathering was especially remarkable for the large number of foreign medical men, some of whom took part in the demonstrations. Official delegates were sent from all parts of North and South America, and Spain, Italy, Portugal, Greece, Turkey, and China, as well as the Scandinavian countries and Holland, were well represented. The success of this memorable occasion will certainly encourage the medical faculty of Paris to repeat the undertaking.

MEDIASTINAL TUMOURS.

MEDIASTINAL tumours are often difficult to diagnose during life and the pathologist may be equally in doubt about their precise nature later on. During the last two or three years a remarkable increase in their frequency has been noticed in America, Western Europe, and this country. The cause of this is not clear; if, as has been suggested, it is the influenza epidemic of 1918–19, their prevalence should presently subside to its former level and it will be of much interest to see what happens in the next few years. Meanwhile pathologists have had a much more ample supply of material and the essential character of some of the commoner forms has come under discussion again. At the last meeting of the Pathological Society of Great Britain and Ireland Prof. T. Shennan discussed critically the cases which had

come to his notice in Aberdeen and emphasised the difficulty of being sure whether some of the tumours were sarcomata or carcinomata. In the past it has been too readily assumed that the majority at any rate arise from connective tissue, and Mr. W. G. Barnard's examination of a series from University College Hospital, communicated to the July issue of the *Journal of Pathology and Bacteriology* noticed in another part of our present issue, throws substantial doubt on this assumption. He divides the large tumours of the mediastinum growing in the hilum of the lung and in the bronchial glands into three histological groups: (1) squamous-celled epithelioma; (2) polygonal spheroidal or cubical-celled carcinoma, sometimes mucus secreting; (3) the tumours which have been known as "oat-celled sarcoma." The first group may, with experience, be distinguished naked eye, but between the second and third there is no constant gross difference. Moreover, if the oat-celled tumours are examined more thoroughly they will be found in places to present a cellular structure suggestive, if not demonstrative, of an epithelial origin. The bulk is composed of oval cells which would naturally be called sarcoma, but these are sometimes arranged in rows and in parts are distinctly polygonal and may form definite cubical epithelium lining tubules or attempts at tubules. In Mr. Barnard's view, therefore, these oat-celled tumours are carcinomata; they form the atypical end of a histological series which, at the typical end, is represented by columnar-celled mucous growths. One is reminded of the very sarcomatous appearance of parts of some of the epithelial tumours which have been produced by tar. The determination that the great majority of these mediastinal tumours arise in the lung rather than in the bronchial glands makes it, perhaps, more credible that influenza may be a precedent condition, though it has to be recognised that in pneumonias the regional lymphatic glands are probably not much less irritated than the lung itself.

TUBERCULOSIS AND PREGNANCY.

THERE are many old clinical sayings with regard to tuberculosis and pregnancy and, like proverbs, they often contradict each other. One school of the past, taking a short view of the case, believed that the outlook was improved by pregnancy and encouraged tuberculous girls to marry. Another laid it down in a dictum which has survived to the present day that a tuberculous woman bears the first pregnancy well and the second with difficulty, but that she rarely survives the third. Probably the confusion in thought on this question may be traced to the fact that there are at least three different points of view involved—namely, (1) the effect of pregnancy on tuberculosis, (2) the effect of tuberculosis on pregnancy, and (3) the effect of tuberculosis on the offspring. All these questions have been ventilated recently in different quarters. A discussion on the subject took place at the provincial meeting of the Tuberculosis Society in Cambridge [1] in March. Prof. Calmette's recent monograph [2] on tuberculosis in the new-born has summarised some of the results on the side of the offspring, and Dr. J. C. Litzenberg [3] has collected a number of records dealing with the statistical aspect. Obviously, much depends upon the material on which the reports are compiled. It is important to know whether the cases used for statistical purposes were sputum positive or sputum negative, what was the clinical character of the pulmonary disease before pregnancy took place, and finally data are required as to the environment of the patients and their opportunities for adequate anti-tuberculosis treatment.

With regard to the effect of pregnancy on tuberculosis, modern clinical observations seem to show that the tuberculous woman does well during pregnancy, but is exposed to grave risks of relapse immediately after the confinement. In the discussion which took place at Cambridge, several speakers emphasised this view and stated that in their opinion patients who were able to avail themselves of adequate sanatorium treatment passed through the months of pregnancy exceptionally well. The other side of the picture is emphasised by those who have to treat tuberculosis and pregnancy in the out-patient class of woman, who by reason of economic circumstances and family cares are unable to adapt their way of life to the cure of the tuberculosis. The risks of recrudescence of tuberculosis in pregnancy are clearly not due to the mere mechanical factors associated with the enlargement of the uterus, and in the discussion at Cambridge Dr. Geoffrey Marshall suggested that some biochemical factor might well lie at the root of the difficulty. Metabolism is profoundly altered in pregnancy, and tuberculosis cannot but be complicated by the adjustments which the body has to make. As to the effect of tuberculosis on pregnancy, this is often surprisingly slight. In the article quoted above, Dr. Litzenberg states that tuberculosis does not appear to predispose the patient to the risks of abortion, but, nevertheless, his figures show that 7–10 per cent. of babies born of tuberculous mothers are still-born, and that 12–15 per cent. die in the puerperium. In view of the various risks involved the question arises whether or not the pregnancy should be interrupted. In Dr. Litzenberg's experience interruption during the first three months has not given good results, and he is in favour of taking the chances of allowing the pregnancy to continue its natural course. He does not, however, discuss the question as to whether interference is necessary at or near the end of the pregnancy. The majority of the speakers at Cambridge stated that in their experience the tuberculous woman passed through the time of confinement exceptionally well and that the fœtus, usually small, gave rise to no mechanical difficulties for the obstetrician. In any case, the parents and the physician must face the question as to whether or not the mother should be allowed to take the risks of a second pregnancy and, if not, what measures should be taken to eliminate this risk. Apparently there are wide differences of opinion. On the one hand, the view is held that in serious cases pregnancy terminated by Cæsarean section with sterilisation effected at the same operation is the safest course; others adopt the easy practice of "leaving matters to Nature." Between these two extremes are various intermediate courses, such as sterilisation by means of X rays which is said to last only for some four years, and the more obvious methods of contraception. Probably most physicians would at any rate agree that a second pregnancy should not follow until the tuberculous lesion has remained quiescent for a period of two years. Finally, there is the child to consider. Prof. Calmette has collected a number of sets of statistics dealing with the mortality from tuberculosis amongst infants born of tuberculous mothers. These figures appear to vary within very wide limits in different countries. According to Calmette, Prof. Forssner, of Stockholm, states that 70 out of 100 children born of tuberculous mothers and brought up in their tuberculous environment die before the age of 12 months, while Lissant Cox and MacNalty [4] put the figure at 22 per cent. for one dispensary in Great Britain. In France, Prof. Calmette estimates that 25 per cent. of such children die before they are a year old. It is clear that the risk to the child of having been born of a tuberculous mother is grave, and no doubt this risk was in times past the main argument in favour of the hereditary nature of tuberculosis. There is abundant evidence nowadays to show that it is not a question of heredity but of close and intimate contact with an infective focus during the first few months of life.

It would appear to be impossible to lay down any very definite rules as to the treatment of a tuberculous woman who is, or may become, pregnant. In many cases there would seem to be no reason for terminating

[1] Tubercle, May, 1926, p. 403.
[2] Annales de l'Institut Pasteur, February, 1926, p. 89.
[3] Minnesota Medicine, March, 1926, p. 129.
[4] Calmette, A.: Loc. cit.

the pregnancy until near the end of the nine months if at all, since the obstetric difficulties are usually no greater than in healthy women. The tuberculous woman, however, runs great risks of exacerbation of the tuberculous process all through the period of pregnancy and a still greater risk in the few months after the confinement is over, if the tuberculosis be not adequately treated. These risks can be greatly minimised by sanatorium régime, and this institutional care would appear to be the obvious course of action in all patients whose circumstances will permit of it. The risks of second pregnancies must depend largely on the good sense of the parents and the wisdom of the physician in handling a difficult situation. For the infant the prospect is not a hopeful one. There is evidently a considerable risk of the infant dying of tuberculosis during the first year. This risk can no doubt be mitigated, if not entirely eliminated, in better-class homes where good nursing and adequate precautions against infection can be adopted. The treatment of tuberculosis is largely a financial question. Amongst the hospital classes pregnancy supervening upon tuberculosis is a grave danger and the outlook is gloomy. In the wealthier classes, where sanatorium treatment can be kept up for a long period and where the mother is not compelled to live in close contact with the infant from the moment of its birth, the outlook for both mother and child is obviously brighter.

THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE Museum of the Royal College of Surgeons is at present closed and will remain so for two months while Rooms I. and II. are being repainted. The Museum has not often been closed since access to it was made easy some years ago. It has not been in the decorators' hands for more than 20 years, when it was shut to the public, not having apparently been so closed since 1890 when the new Museum buildings were erected. We are so accustomed to the idea of the priceless Hunterian collection being accessible to all interested in its contents that it is at first not easy to realise the long periods in its early development when it was a kind of Bluebeard's chamber unknown to the general public and to many of our medical predecessors. A century ago the Museum was closed during at least eight months of the year, and visits thereto during the remaining four were often effected only by private arrangement with the conservator. It was an indefatigable member of the staff of THE LANCET, James Wardrop, of aneurysm fame, who first agitated in the cause of museum reform, though the conservator, William Clift, had already begun to conduct parties of visitors round the collection twice a day, a practice kept up by him to the end of his tenure of office. At the thirteenth meeting of a committee of members of the College, held at Freemasons' Tavern on July 7th, 1826, Wardrop presided and read to the assembled reformers the terms and conditions on which the Hunterian collection had been delivered to the College by Parliament. It was unanimously decided that the curators had not opened the Museum in the hours specified by the grant, while they had not prepared the catalogue in accordance with directions. It was thereupon proposed at the meeting, in view of the default of the authorities, that the Museum should be open for four hours every day (Sundays excepted) in the winter months and six hours in summer months, that it should be accessible to all suitable visitors, and that a catalogue should be compiled. The Museum Board of the College replied to this suggestion, or rather stricture, by deciding that the Museum should be open two days a week for four hours at a time during the whole year. The movement for reform was therefore immediately successful up to a point, but it was not till 1865 that the collection came to be open at about the same times and hours as now. The accusation of neglect in providing a catalogue led to a full statement of excuses being presented to the Hunterian trustees apparently by Clift, the conservator, who had found John Hunter's collection in a state of chaos and had laboured for years to reduce it to order and to describe and identify particular specimens. The interesting history of the various printed editions of the catalogue will be found in the prefaces to Paget, Goodhart, and Doran's "Descriptive Catalogue of the Pathological Specimens contained in the Museum of the Royal College of Surgeons," Edit. 2, 1882. These prefaces are an abundant justification of the old generation of conservators and a fine record of scientific progress. There is no doubt that the attitude of the Council of the College towards the members dictated a quite unreasonable and even illegal restriction of the members' rights in respect of the Hunterian Museum, but it is easy to see that the impossibility of an immediate preparation of a catalogue was not appreciated. The task was a very difficult one, and a misleading catalogue would have been worse than no catalogue at all.

FLUORESCENCE.

IN the course of a series of articles[1] on the Pathological Action of Light upon the Eye, Dr. W. S. Duke-Elder stated that the wave-length of fluorescent light was generally longer, but sometimes shorter than that of the exciting light. An annotation in our issue of July 3rd calling our readers' attention to the valuable way in which Dr. Duke-Elder had marshalled his facts for the benefit of the phototherapist contained the broad assertion that the wave-length of fluorescent light is never shorter than that of the exciting light. This is not strictly the case, for there is a very small group of bodies which under the excitation of light gives out radiation which is actually of shorter wave-length than that which excites it. These bodies constitute exceptions to Stokes's famous law, a law which has such wide application, not only in the luminous spectrum, but in the ultra-violet and X ray regions. While we gladly express our regret to Dr. Duke-Elder for having apparently controverted his perfectly correct statement, we would remind our readers that the bodies in question are at present puzzling exceptions to a law of wide validity. Full information about them is available in an article by Nichols and Merritt in the *Physical Review* (vols. xviii. and xix.).

URETERAL AND TRIGONAL STRICTURE.

MUCH of our knowledge of ureteral strictures has been derived from American observers, and A. H. Peacock and R. F. Hain have contributed further to this subject in the July number of *Surgery, Gynecology, and Obstetrics*. Their contribution consists of a study of 76 cases of ureteral stricture. In the ætiology of the condition the two chief factors are infection and trauma, of which the former is the more important, for out of 76 cases 63 gave a history of infection, either acute or chronic. The infection was not necessarily of the urinary tract; influenza, scarlet fever, diphtheria, pneumonia, puerperal fever, otitis media, and dental infection all led later to infection of the ureter. No preference was shown for either side, but the favourite site of the stricture was found to be the lower third, and, in the case of women, more especially that portion of the ureter directly in relation to the broad ligament. The patients came under observation for a great variety of symptoms, many of them having been regarded as cases of neurasthenia. An interesting finding was the number of operations to which some of these patients had been subjected in order to obtain relief of their symptoms. One case, that of a woman of 28, who complained of frequency of micturition and tenesmus, and had once passed a small quantity of blood, had undergone two operations on the left hip, appendicectomy, salpingectomy, a partial oöphorectomy, tonsil-

[1] THE LANCET, June 12th, 19th, 26th, and July 3rd, 1926.

lectomy, an operation for intestinal adhesions, and a therapeutic abortion at the fifth month. The real source of her trouble was a ureteral stricture. In the majority of cases nothing beyond dilatation of the stricture by the passage of a ureteral bougie was found to be necessary.

To the same journal Frank Hinman and Miley B. Wesson contribute an interesting article on the trigone of the bladder as a factor in urinary obstruction. It is, of course, well known that changes in the trigone occur in cases of urinary obstruction and infection. The authors lay emphasis on the fact that an hypertrophied interureteral ridge may from its form and position lead at times to obstructed urination. When this occurs surgical treatment may become necessary. This may take the form of incision of the ridge with suture and ligature of the incised ledges in order to control hæmorrhage, or of resection of the ridge, and where necessary of the supratrigonal pouch so as to restore the base of the bladder to its normal form. The authors instance three cases under their care of urinary obstruction and infection in which the associated changes in the trigone were so marked that operative treatment was rendered necessary. In operating on a hypertrophied interureteral ridge care must be taken to avoid resecting so much of the trigonal muscle as to endanger its functional activity. Special precaution must also be taken against hæmorrhage, and for this reason Young's punch operation, which otherwise might be regarded as suitable, should not be carried out. The article discusses the anatomy, physiology, and pathology of the trigone, of which our knowledge still remains meagre.

DE MOTU CORDIS.

IT is the intention of the Royal College of Physicians of London to celebrate in 1928 the tercentenary of Harvey's publication of the famous treatise "*Exercitatio de Motu Cordis et Sanguinis.*" It may be prophesied safely that the anniversary of Harvey's formal announcement of his grand discovery will be a marked date in all philosophical associations throughout the ages. That is a large prophecy, but the explanation of the circulation of the blood is, and always will be, recognised as the greatest physiological exploit the world has known. Harvey taught medicine to step in one gigantic stride from the tenets of the Alexandrian School to the medicine of the sixteenth century, behind which date we now need never look for the foundations of medical science. The poetical and classical allusions to the circulation of the blood were merely fanciful, even when their words may appear to imply exact knowledge. Galen's assistance in the final revelation should not be overlooked, for he pointed out that the arteries did contain blood as well as air, though he insisted that the septum between the right and left ventricles was permeable. Vesalius, three-quarters of a century before Harvey, demonstrated, though he did not assert, the complete separation of the ventricles, while just previously Sylvius had described the valves in the veins. The combined significance of the two researches was, however, missed, particularly as the valves were believed to act as brakes to the flow of blood from the heart. Servetus, a little later, had a conception of the mass of the blood passing through the pulmonary artery and the lungs, but did not appreciate this lesser circuit as a part of a grand circulation of the whole. Harvey's treatise demonstrated the heart as the motor starting point of the blood, placed the liver in its proper relations, and arrived at one general solution of the various problems in an incontrovertible manner; the only gap in his theory as it was first set out cannot be held as a reproach to him, for the non-recognition of the capillary connexion between the arteries and the veins was due to his work being done without the assistance of the microscope. Malpighi completed the story of the circulation of the blood by the use of the newly invented microscope shortly after Harvey's death, but Harvey's work had made Malpighi's addition a logical inference. The discovery was made and was promulgated in a faultless way. Before Harvey was ready with the exact demonstration he taught publicly in accordance with his theories, and although so radical a rearrangement of all physiology was not and could not be expected to be accepted universally and immediately, he had on his side throughout some of the greatest thinkers, while others became rapid converts to his views. As is well known, there are competitors for the honour of discovering the circulation of the blood, but no one really familiar with the literature of the grounds upon which the claims are made can fail to see that William Harvey was the one and only revealer of the whole drama—the first man, indeed, who knew the plot.

A DIPLOMA IN NURSING.

THE University of London has followed the University of Leeds in instituting a diploma in nursing and the first examinations will probably be held next year. The diploma is intended for those registered nurses who have undertaken further study and training so as to qualify for responsible posts, and it will generally be taken after a nurse has been qualified for at least two years, one of which must have been spent in a hospital or public health department. Before entering for the diploma the nurse will have to produce evidence of having attained to "a suitable standard of general education." The examination then required will be in two parts. The first may be taken at any time after registration or after the time at which the nurse becomes eligible to sit for the State examination, and for this part the candidate will have to show knowledge of the scientific basis and general principles of nursing, including elementary psychology, and of the history of nursing. When she has satisfied the examiners in this part the candidate may proceed to the second part, provided that for not less than two years she has been eligible to sit for the examination admitting to the general part of the Register of Nurses. In this part she need only offer one of the following alternative subjects: the nursing of children; mental nursing, including psychology; fever nursing and epidemiology; obstetric and gynæcological nursing; general nursing; or elementary economics, sociology and hygiene in relation to the duties of public health nurses or hospital administration. Those who enter for the first three of these subjects must for two years have been eligible to sit for the examination admitting to the appropriate supplementary part of the Register of Nurses. Those who take obstetrics and gynæcological nursing as their special subject must hold the certificate of the Central Midwives Board, whilst those who take elementary economics, sociology and hygiene must hold a health visitor's certificate. The examinations for the diploma will be held in October and November of each year, and an elaborate syllabus is being published, together with a list of the books recommended to candidates. Registered nurses would be well advised to apply to the University of London for this syllabus and to the College of Nursing for information about existing post-graduate lectures. As a new objective the diploma will undoubtedly stimulate keen students, and its scope suggests that its effect on candidates will be educational as well as instructive.

INDEX TO "THE LANCET," VOL. I., 1926.

THE Index and Title-page to Vol. I., 1926, which was completed with the issue of June 26th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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CLXXXIV.

THE TREATMENT OF INFECTION AT THE APICES OF TEETH.

INFECTION at the apex of a tooth may be brought to notice in several ways, commonly as an acute alveolar abscess or as a chronic abscess discharging into the mouth by an obvious sinus. It is not proposed here to discuss either of these conditions, but to confine attention to that form of apical infection which commonly occurs with no obvious signs or symptoms, and is only disclosed when a radiogram shows an area of rarefied bone immediately round the apex of a tooth or the apices of several teeth. Such apical rarefaction ordinarily only occurs in "dead" teeth, and nearly always in teeth the pulps of which have become exposed by the advance of dental caries and infected by organisms from the mouth, and have died. Those "dead" teeth in which the tooth pulp has been purposely devitalised by the dental surgeon should, if his technique has been correct, be sterile at the apical portion of the pulp canal from the start, and so never show these rarefied areas, and in such teeth this is the rule.

The importance of these otherwise signless and symptomless apical infections lies in the fact that they are usually found in the mouths of people who are seeking medical advice for general symptoms of a wide variety, for which no immediate cause can be found, and it is in the medical man's careful search for some source of focal infection that radiograms of the jaws frequently give the first intimation that such infections exist. Moreover, these infections are more frequently found in people who take every care of their teeth; there is every reason why this should be so, because they occur far more commonly in filled dead teeth than in teeth with dead pulps which are left untreated, though they do occur in these latter also.

Routine Treatment of an Infected "Dead" Tooth.

A "dead" tooth with an infected pulp canal may or may not give an abnormal response to percussion (periodontitis) but the contents of the pulp chamber and canals will always be extremely foul. Except at some three or four educational centres in various parts of the world where, during the past few years other means have been tried, the ordinary routine treatment given by the dental surgeon preparatory to the insertion of a permanent filling in such a tooth is as follows:—

The infected contents of the pulp canals are removed by mechanical means and the (attempted) sterilisation of these canals is carried out by means of sealing into the canals a dressing of a mixture of as powerful and penetrating antiseptics as one dare use consistent with non-injury to adjacent soft parts, particularly by leakage through the apical foramen of the tooth. Usually such dressings are repeated several times, and occasionally many times.

But the *only* signs that the tooth is ready to be filled—i.e., that the root canal has been rendered sterile—which are available to the dental surgeon are these:—

(1) The cessation of the clinical signs of periodontitis (which may never have been present at all).

(2) The sense of sight, that there are no obvious particles of matter left in the canals.

3. The sense of smell, that the foulness has disappeared.

These tests for sterility appear to me to be but feeble at the outset, particularly the third; our sense of smell is a poor sense, and with the powerful odours of the drugs which are used for antiseptic dressings about, the sense of smell is of no value whatever, even to detect gross infection by gas-producing organisms—added to which is the fact, not sufficiently recognised by dental surgeons, that many infective organisms produce no smell at all on culture.

After these precautions have been taken the root canals of these teeth are usually filled permanently with some such material as gutta-percha with or without the addition of antiseptic drugs, and the restoration of the tooth by one of the usual forms of filling is completed.

Let it not be thought that the dental surgeon is careless in his treatment of such dead and infected teeth, because he certainly is not; the treatment and conservation of such teeth are invariably an anxiety to him. Moreover, in the past the results of such treatment has been entirely justified, as many otherwise unsavable and offensive teeth have been rendered painless, comfortable, and fully functional for many years if not for the whole life of the individual. However, it will be fairly obvious from the above remarks that the treatment of dead teeth is in an unsatisfactory state, and indeed this is so; for there is no proof that the root canal of the tooth, and still more the soft tissues beyond it, are really sterile. Indeed, in my view, but few teeth which have become infected in the manner described are ever rendered sterile by the dental surgeon, but the inhibitory effect of the powerful drugs used on any micro-organisms present is such as usually to keep them in check. Radiograms, however, too frequently show us that though teeth so treated may be entirely comfortable and function well, they have never really been sterilised, and that infection still persists and gives rise to the ordinary appearance of a rarefied periapical area.

Can Infected Teeth be Sterilised?

In order to test out whether such infected teeth could be rendered sterile I induced several students interested in this matter to make some culture experiments and microscope slide films from such treated teeth *after they were thought to be clinically sterile.*

The drugs usually used for the dressing of such teeth are:—

(1) A mixture of 40 per cent. formalin 1 part, tricresol 1 part, absolute alcohol 3 parts with the addition of a few minims of some essential oil to act as an analgesic.

(2) Dichloramine T—used mainly in America.

(3) Silver precipitated in situ from an antiseptic silver salt.

(4) Many proprietary articles sold for this purpose, some of which are very efficient, and other mixtures.

The antiseptic mixture (1) was used mostly and occasionally a proprietary article. Precipitated silver was not used, because though I believe and am informed that the tooth itself really is sterilised when this is used, the soft tissues beyond are not; moreover, the tooth tissue is stained an unsightly colour, so the method is not available for anterior teeth.

The routine for the experimental treatment of dead teeth with infected pulp canals was on the following lines:—

First visit.—Apply rubber dam. Empty pulp *chamber* thoroughly (not using any pressure towards apices). Fill chamber with a pledget of cotton-wool saturated with tricresol-formalin-alcohol solution, cover over with metal pulp cap. *Seal* in with calxine. Leave for 48 hours.

Second visit.—Apply rubber dam. Remove contents of pulp canals thoroughly by mechanical means. Wash out with 10 vol. H_2O_2, follow with absolute alcohol. Dry with hot air. Fill root canals and pulp-chamber loosely with cotton-wool saturated with tricresol-formalin-alcohol solution. Cover over and seal in as at first visit. Leave for 48 hours.

Third visit.—Apply rubber dam and remove dressings. If clinical appearances now indicate that tooth is ready to be filled permanently, wash out thoroughly with absolute alcohol, dry with hot air, place sterile paper point in root canal, cover and seal as before, leave for seven days (approximately).

Fourth visit.—Apply rubber dam and remove dressings. If clinical appearances still indicate that tooth is ready to be filled permanently, take two cultures for incubation and make two micro slide films (these last two operations under supervision), using the paper point removed from the root canal, and then redress as at second visit. If tooth is clinically not ready to fill, redress as at second visit and leave for 48 hours, and make cultures and films

when apparently sterile, and so on, till the microscope tests are negative, when the restoration may be completed.

The results of these experiments, as far as they went, were not reassuring—indeed, were very disappointing. Some 5 or 6 teeth were dressed and tested frequently over a period of six months, and still were not sterile. A few others gave a similar result over rather longer periods, and one (fortunately owned by a bacteriologist) gave a sterile microscope test when weekly dressings had been continued for a year. Two others only gave positive sterile tests, each after about six weeks' treatment. The tests were begun on some 30 teeth, but patients (all but two being hospital patients) could not spare the time for the frequent and numerous visits needed, and so only very few were really followed out. The matter is thus in urgent need of further research.

Conclusion.

How, then, are we for the future to regard these dead teeth with infected pulp canals from the point of view of conservative dentistry? Let it be granted that when tested by cultures and films they can, usually after prolonged treatment, be rendered sterile. Then, I think, we may say:—

1. That for single-rooted teeth with straight pulp canals conservative treatment may be justified, but that the prolonged treatment, time occupied, and necessary expense involved, will militate against such a course.

2. That for multi-rooted teeth (not so easy of access) or teeth with small and tortuous pulp canals extraction should be recommended.

Such is to my mind the only rational course—i.e., teeth must either be proved sterile by culture or film, or extracted.

Many patients will object to such treatment as being too drastic, and many dental surgeons will object on account of the comfort and restoration of function which they can afford to such teeth in other ways. It must also be borne in mind that many people are walking about with many (up to eight or nine or more) such rarefactions at the apices of teeth in their mouths and no general or local symptoms whatever. On the other hand, the removal of one or two such infections in one mouth has in several cases known to me been followed almost immediately by the disappearance of the general symptoms complained of, for which no other cause could be found.

It would seem that until we have some more certain means of sterilising such teeth their conservation ought not lightly to be undertaken; till that time I would not take the responsibility of advising anyone to retain such infected areas in their mouths even if they were giving rise to no symptoms, nor would I retain one myself. If conservative treatment is decided on the patient should be informed beforehand of the possible result.

EVELYN SPRAWSON, *M.C.*, M.R.C.S. Eng., L.R.C.P. Lond., L.D.S. R.C.S. Eng.,
Director of Dental Studies and Lecturer on Dental Surgery and Pathology, London Hospital.

INTERNATIONAL CONGRESS FOR LIFE-SAVING AND FIRST-AID.—The Third International Congress for Life-saving will be held at Amsterdam from Sept. 6th to 11th under the presidency of Prince Henry of the Netherlands. Many different countries will be represented both officially and unofficially, and national committees have been established all over the world in preparation for the Congress. Besides general sessions there will be meetings of the 11 sections, and more than 100 lectures have been arranged; there are also to be demonstrations of ambulance work and of saving the shipwrecked. The first international competition in first-aid will be a feature of the Congress, and visits will be paid to The Hague, Rotterdam, and other interesting places; the municipalities of Amsterdam and Rotterdam are arranging to hold receptions. Members of the Congress will be able to get a Dutch visa for their passports without difficulty, and accommodation in hotels or lodgings will be arranged as far as possible. The executive committee asks all those who wish to attend to send word without delay to the Secretary-General, Dr. C. J. Mynlieff, Keizersgracht 131, Amsterdam.

Special Articles.

INCAPACITY FOR WORK.

The New Memorandum of the Ministry of Health.

A FEW weeks ago [1] the Scottish Board of Health called the attention of insurance practitioners in Scotland to the sudden increase in the certification of claims for sickness and disablement benefit. The Minister of Health has now expressed his concern at the abnormal increase during the last two months in the number of insured persons in England and Wales receiving sickness and disablement benefit and the resulting heavy expenditure incurred by many approved societies. Information available from other sources does not indicate the prevalence of any marked epidemic or exceptional outbreak of sickness which would account for this increase in the number of cases of certified incapacity, and it is significant that the ratio of expansion is not uniform throughout the country and that its geographical distribution corresponds closely with the incidence of unemployment due to the dispute in the coal trade. The memorandum upon the subject addressed to insurance practitioners runs as follows:—

The results of the examination of a large number of cases referred to referees, and in particular the high proportion of claimants who sign off in preference to presenting themselves for examination, suggest strongly that large numbers of insured persons have succeeded in obtaining or continuing to obtain medical certificates although they were not in fact incapable of work. The Minister cannot escape the conclusion that many practitioners in the industrial areas mainly affected have failed to appreciate the danger that in times of acute unemployment there is inevitably a tendency to magnify minor ailments and to claim sickness benefit in circumstances in which, under ordinary conditions, no claim would be made. Normally the difference between sickness benefit and average earnings is sufficient to afford the employed person a substantial inducement not to leave work or to return to it as soon as he is able to do so; and doctors have, no doubt, in the past proceeded on the assumption that in cases in which there were no definite physical signs, the patient's account of his subjective symptoms might, in general, be accepted in the absence of any indication to the contrary. But in many areas this economic safeguard against ill-founded claims no longer exists, and the Minister fears that practitioners have not sufficiently realised that an increase in the number of claims in itself necessitates more than ordinary care in considering whether the statutory conditions for the receipt of sickness and disablement benefit have been fulfilled.

He therefore desires to remind practitioners that the statutory test of title to these benefits is that the insured person has been rendered incapable of work by some specific disease or bodily or mental disablement, and that strict regard must be had to this criterion in considering all cases coming before them. No practitioner is justified in allowing the economic position of the applicant for a certificate to lead him to adopt a less stringent standard than the Acts require; it should be remembered that any laxity in the issue of certificates, whether unconscious or deliberate, is extremely unfair to those doctors who have continued to take a strict view of their obligations under the Terms of Service. Moreover it must not be forgotten that excessive indulgence to individual members of approved societies must thereby deprive members in general of sums which might otherwise have been used in providing additional benefits in the future.

The Earlier Memorandum.

The opportunity has been taken to reissue simultaneously the memorandum prepared by the Ministry four years ago for the guidance of practitioners in interpreting the term "incapable of work." This memorandum made no claim to laying down legal definitions, being content to summarise accepted views. The significant passages in it are the following:

It has not been held to be necessary for the purpose of establishing a title to sickness or disablement benefit, that the insured person should be found to be incapable of work, in the sense of being completely unable to carry out the

[1] THE LANCET, July 10th p. 97.

physical or mental processes which constitute "work." An insured person has been regarded as "incapable of work" when in such a condition, through some specific disease or bodily or mental disablement, that an attempt to work would be seriously prejudicial to his health.

Secondly, though the fact that an insured person is unable to follow his ordinary occupation is not in itself sufficient to justify his being regarded as incapable of work, yet he would properly be so regarded if, as will ordinarily be the case, it appears probable that he will soon be able to resume his former work, and that it would therefore be unreasonable to expect him to undertake any other form of work in the meantime. This is the criterion which doctors are ordinarily disposed to apply, and it suffices, no doubt, for the ordinary case of a short illness.

There is, however, a group of cases which, though a minority, are yet considerable in number and of great importance in their potential effect on the sickness and disablement benefit funds, and in which other conditions need to be taken into account. It is with regard to these that in the past there has been most misunderstanding by medical practitioners of the position as regards title to benefit. At varying stages in the course of different diseases, or after the occurrence of particular injuries, it will become clear that there is no reasonable prospect of the patient again becoming able to resume his former occupation. This may be apparent in some cases almost from the outset—for example, where a person whose work requires some particular manipulation has sustained an injury which immediately renders him permanently incapable of carrying out that manipulation, or where a person has become blind. When this condition of permanent incapacity to resume the previous occupation has supervened, a different criterion from that of fitness for ordinary occupation must, it has been held, be applied, and the patient should not be certified as "incapable of work" unless in the doctor's opinion he is physically unable to perform any other suitable kind of remunerative work, whether at once or after a short course of training.

A Difficult Situation.

A close association has often been noted between sickness claims and social conditions; thus when wages fell and unemployment began to affect the mining industry from 1920 onwards, the incidence of reported accidents rose, while the occurrence of fatal accidents showed no such rise. In a similar way the present industrial position is being associated with an abnormal increase in the number of persons receiving sickness and disablement benefit, an increase which the Ministry of Health point out in a recently published memorandum is not uniform throughout the country, but is distributed in close correspondence with the incidence of unemployment due to the dispute in the coal trade. It is an obvious presumption that the increase in applicants for certificates in respect of sickness and disablement benefit—in other words, of incapacity for work—represents a tendency to magnify minor ailments, so as to claim benefit, for which normally no claim would be made. Control of this tendency must always be difficult, especially as is pointed out in our correspondence columns when an insured person is free to change the doctor whose certification does not please him, but the Ministry rightly stress the point that the economic position of an applicant for a certificate under the Insurance Act should not affect the practitioner's judgment, and that the standard of disability—i.e., of incapacity for work—should be maintained. For this purpose the memorandum published some four years ago, and explaining the meaning of the term "incapable of work," is being simultaneously re-circulated to insurance practitioners. It is useful that practitioners should be reminded in this way of their legal responsibilities when issuing certificates, but the medical profession can hardly resist the influence of removal of the great economic safeguard against poorly-founded claims, for it is a normal safeguard in this direction since by establishing a claim of disability the working income is reduced. Moreover the absence of occupation in itself tends to introspection which may make manifest conditions, whether really latent or merely imaginary. The cure for the abnormal rise in claims lies fundamentally not in an appeal to the medical profession to be exceptionally alive to malingering, but in resumption of the normal incentives to remunerative activity. The new memorandum does not, we are sure, desire to reprove medicine for what medicine is in no way responsible, and if this impression were received publicly the position would be unfair to the profession. Moreover the standard of ill-being in the nation, though improving, is low; it might more than occasionally justify certification for incapacity of persons who disregard their ills to the final detriment of their well-being.

REPORT OF THE LUNACY COMMISSION.

SOME CRITICAL VIEWS.

THE Report of the Royal Commission on Lunacy and Mental Disorder, of which the main provisions were summarised in our last issue,[1] has, in many respects, received warm commendation from those interested in the prevention and early treatment of mental disorder. It is generally agreed that the work of the Commission has been done in a thorough manner, that the Report is well-written, and that it contains a great deal of valuable information. It seems probable, too, that a report so little controversial may lead to speedy legislation, which will be all to the good in so far as the long overdue permission is granted to local bodies to provide early treatment. The view, however, is expressed that the public, and the medical public in particular, will need to scrutinise very closely the results of permissive legislation; a general and constant demand that the problem shall receive full and adequate handling must be maintained, in order to achieve results in the prevention of chronic mental disorder with its heavy burden to the community.

Treatment without Certification.

Some of those now engaged in the treatment of mental cases without certification may very naturally feel that the constructive proposals leave something to be desired. No one will expect that, in the present time of economic stress, and under a Government pledged to economy, legislation of a very far-reaching nature involving much present expenditure and the initiation of a new service of preventive medicine is likely to be even proposed, much less passed by Parliament. But a Royal Commission might surely put forward an ideal, and leave it for the practical politician to do the paring that may for the moment be necessary. They do, indeed, point out that present expenditure on early cases may be productive of future saving—it may obviate the maintenance for life of cases coming under treatment too late for cure. But the important part of their work—the consideration of provision for early treatment without certification—appears lacking in constructive ideals and imaginative foresight. Very scant attention is paid to the actual provisions for care of the patient, the greater part of the report being concerned with (1) legal provisions, long overdue, for treatment under a provisional order of those unable to coöperate, and under a voluntary system for those who are able and willing to do so; and (2) the various local and central authorities responsible for such treatment. The implication throughout is that the existing arrangements and institutions simply need extension, and it is not clearly and definitely stated how urgently separate and new institutions are necessary if the early treatment is to apply in fact to the mass of patients at present neglected. The Report suggests general hospitals, nursing homes, and mental hospitals and special clinics associated with any of these; but it merely advises that "it should be open to the local authority to provide such clinics." It does not put forward the difficulties and complications involved, nor even urge that any pressure should be brought to bear on the local authorities to make effective provision, without which little will materialise. General hospitals will not burden themselves with the procedure required by the Board of Control, nor

[1] THE LANCET, July 31st, p. 239.

gladly coöperate in the supervision which is necessary; nor again will they readily make suitable provision of specially trained nursing and medical staffs. It is well known that one mental patient of quite a mild type will arouse such fear and antagonism in a general hospital that the whole staff press for his immediate removal, while the neurotic is at present apt to be regarded there as a tiresome person having nothing the matter with him. Moreover, the accommodation at present in most general hospitals is unsuitable, and special buildings with gardens, open-air sleeping quarters, occupations and amusements, and sound-proof, detached blocks for emergency treatment of transient noisy attacks, are essential for satisfactory early treatment. The out-patient clinic, however, may best be here.

The provision of suitable admission blocks or villa colonies attached to, but well apart from the existing mental hospitals, may be the best solution for certain districts; but again the Commission has failed to emphasise that greatly increased medical and nursing staffs are absolutely essential for these. Further, it is only a limited proportion of the patients needing early treatment who will accept it when even the slightest association with the mental hospital is involved, and in practice it will be chiefly the coöperative section of the present mental hospital patients who apply for treatment there. Those neurotics who do not realise that their disorder is one of the mind will remain, as at present, untreated.

Special clinics can, and should, be provided; in London one exists already for such patients as have a claim on the London rates; when other local authorities are empowered, as the Commission suggests, to spend money for this purpose, it should not be impossible to arrange for a number of local bodies to coöperate in providing such accommodation as they need, or to take over existing convalescent and nursing homes and equip them suitably. It may be regretted that the Report has not put more forcibly the importance of devising such arrangements, since without them the result in practice may merely be a slight extension of treatment without certification in existing mental hospitals at the cheapest possible rate; this implies failure of a great opportunity for a far-sighted handling of the problem of relieving the community of its present burden of neurosis and psychosis.

Treatment with Certification.

From the point of view of those who have the care of private patients of the well-to-do classes, the recommendations concerning the unwilling patient are seen to have their drawbacks, especially when regarded from the point of view of the private patient. Two courses are to be made available, appearing to depend on the prognosis of the case. If the physician considers the case likely to recover within six months a provisional treatment order may be obtained. This is to necessitate a petition by a responsible relative, on which some disclosure of the patient's property is to be made. The petition is to be accompanied by one medical certificate of the usual kind, which must conclude by a statement that the condition of the patient is such that he should be detained under care and treatment. The petition and certificate are to be forwarded to a magistrate, specially appointed for the purpose, who is to see the patient, and if satisfied, give the provisional order. This order will only last for one month, at the end of which time the judicial authority must again visit the patient, and on a medical recommendation that the patient's illness is likely to terminate in the statutory time, may sign an extension of the provisional order for a further five months. At the end of this time the patient may have recovered, or be sufficiently well to become a voluntary boarder. But if little or no progress towards recovery has taken place, then the usual reception order will be required, involving two medical certificates, and a further magisterial visit. In short, a year's illness may entail three medical certificates and three judicial examinations. This provisional treatment order is termed treatment without certification. Is it likely to be so regarded by the public? If it becomes law it may be found to be as objectionable to the private class of patient as the existing procedure. In fact, it is probable, writes one critic, that it will obtain, and deserve, the "stigma" that is so objectionable in the present form of certification. It is certain that many patients will be distressed by the double judicial examination in the first four weeks of illness.

It is true that the provisional order is to be used for those cases which are likely to recover in six months, the usual reception order being used for cases which are less favourable. But what physician will care to give a bad prognosis? In a mental case, what physician, however experienced, can rightly give an unfavourable prognosis at the beginning of a mental illness? The obvious inference is that most cases will be admitted to care under a provisional order, and that the reception order, with two certificates, will have to be made at the end of six months in those cases which run an unfavourable course.

In view of the objection that many patients of the private class have to judicial visits, it is to be hoped that some modification of the suggested provisional order may be made.

JOURNÉES MÉDICALES DE PARIS.

(BY OUR PARIS CORRESPONDENT.)

LARGE numbers of French and foreign doctors attended the Journées Médicales held at Paris from July 15th to 19th, when recognised authorities gave post-graduate lectures on medical and surgical methods or technique. The Congress was intended to refresh the knowledge of practitioners and to make them familiar with important modern advances, and it gave those present a chance of hearing some of the opinions now orthodox in France.

Amongst those who attended from abroad was Prof. E. A. Graham, of St. Louis, U.S.A., who gave an account of his work on the radiographic examination of the gall-bladder. He claims that cholecystography, the method which he devised in 1923, permits of early and accurate diagnosis of lesions of the gall-bladder which may otherwise present great difficulty.

An interesting demonstration was given by Dr. P. Ravaut, of the Hôpital St. Louis, who showed a series of 27 cases of lupus treated by diathermy coagulation. An early lesion, he said, can be effectively destroyed by this treatment at a single sitting, leaving the least possible scar, and it is thus a method of prophylaxis. Early diagnosis is very desirable, but even very extensive lupus can be dealt with if the treatment be repeated on several occasions.

Recto-sigmoidoscopy.

A session at the Grand Palais was devoted to the advantages of recto-sigmoidoscopy. This procedure, it was suggested, is far too seldom practised—partly because it is supposed to be difficult and partly because medical men are unaware of its many uses. Dr. Bensaude, of the Hôpital St. Antoine, laid stress on its value from two points of view, the diagnostic and the therapeutic. It ought, he said, to be the prevailing means of diagnosing cancer of the rectum, which is characterised on examination by its shape, its bright red colour, its friability, and its consistency, and by the obstruction which it causes to the passage of the rectoscope. Hæmorrhoids may either simulate or mask it. Sigmoidoscopy, said Dr. Bensaude, is necessary in cases of dysentery or dysenteric colitis, even if examination for parasites or bacteria prove positive, since cancer may complicate a case of dysentery or may occur in patients who are carriers of amœbæ. Some neoplasms look like benign polyps and their malignant nature can only be recognised at operation; villous tumours, on the other hand, are frequently mistaken for cancer. Therapeutic

endoscopy, he stated, is used for three main purposes —in the treatment of piles, of polyps, and of rectal stricture. In piles the use of sclerosing injections is giving remarkably satisfactory results and there are never any serious complications arising from them. In all the benign new growths of the rectum electrocoagulation is the treatment of choice, and for rectal strictures the success of diathermy contrasts favourably with the failure of surgical intervention as hitherto practised.

Peptone Therapy.

Dr. Pasteur Vallery-Radot (Paris) gave a demonstration of the technique of skin reactions and the results to be got in cases of asthma, hay fever, urticaria, and other anaphylactic conditions. A positive reaction, he said, should be regarded as an indication for specific treatment, but often, unfortunately, it is impossible to protect the patient from the protein which upsets him, and in these cases desensitisation is required. In dealing with digestive anaphylaxis desensitisation may sometimes be brought about by giving increasing quantities of the harmful protein by the mouth over a period of several weeks; or the patient may be given, an hour after the food which affects him, an infinitesimal quantity of the very same food. According to Dr. Vallery-Radot, where the patient is troubled with respiratory anaphylaxis the desensitising protein should be given subcutaneously, or, better still, cutaneously. This last method is without danger and simply consists in producing repeated skin reactions with the specific antigen over a period of several weeks. It must be recognised, however, that though diagnostic skin reactions sometimes reveal the particular protein to blame for the patient's symptoms, nevertheless, more often than not, they are negative and throw no light on the culprit. In these circumstances non-specific desensitisation is needed. In alimentary anaphylaxis a small dose of peptone—preferably polyvalent—should be given by mouth one hour after meals three times a day. Eating between the three meals should be forbidden. For asthma the peptone should be given by strictly intradermic injection, daily for about three weeks. A 50 per cent. solution of Witte's peptone may be used in doses of 0·1 to 0·3 c.cm. The treatment acts by producing a local reaction which determines a general shock; after a series of these shocks more or less permanent desensitisation may be hoped for.

Treatment and Prophylaxis of Diphtheria.

The research done during the last few years on diphtheria—and especially the discoveries of Ramon of the Pasteur Institute—have improved the treatment and prophylaxis of diphtheria. In a conference at the Hôpital des Enfants Malades, Dr. Pierre Lereboullet said that early, intensive, and prolonged serotherapy should be the rule in treating diphtheritic sore-throat. The doses, whilst varying with the duration and the gravity of the disease, ought to be much higher than is generally believed. In an ordinary angina the least that should be injected is from 150 to 200 c.cm., and the total dose, which ought never to be less than 500 c.cm., could and should reach or even exceed 800 or 1000 c.cm. Thanks to these doses malignant diphtheria shows 80 per cent. of cures. Moreover, the massive and systematic use of serum hinders the appearance of paralysis. For malignant diphtheria serotherapy should be associated with the administration of adrenalin subcutaneously and of suprarenal extract by the mouth. Accidents with serum have been much diminished by the use of Ramon's purified serum, and diphtheria can also be prevented by lasting and harmless vaccination. Two or three subcutaneous injections of Ramon's anatoxin are made at intervals of three weeks to bring about this protection, and the results are much more satisfactory than those of serum prophylaxis, whether in hospitals or communities or amongst families and contacts.

Cancer of the Colon.

The Société des Chirurgiens of Paris held on July 15th a special sitting in connexion with the Journées Médicales. Among the more important communications was one by Dr. Victor Pauchet who has come to the conclusion that operation is desirable in all cases where cancer of the intestine is so much as suspected. Laparotomy is without risk, whereas delay may cost the patient his life. The prognosis depends on the time of intervention as well as on the technique of the surgeon. Diagnosis is difficult at first and Dr. Pauchet advises exploratory laparotomy when any of the following symptoms are present—abdominal tumour, constipation with diarrhœa, pain accompanied by colic and rumbling, blood or mucus in the stools, obstruction or lacunæ seen with the X rays, or visible peristalsis. He is not content with rectocolic endoscopy since it only shows tumours in the lower sigmoid.

Lavage of the Vesiculæ Seminales.

At the same session Dr. Georges Luys demonstrated his technique for lavage of the seminal vesicles, which he has carried out more than 150 times. The operation, he said, is very simple, although it may appear rather delicate. The object is to get rid of those organisms which ordinary methods, such as massage of the vesiculæ or urethral dilatations, cannot touch. An incision, 2 cm. long, is made at the level of the root of the scrotum; the vas deferens is isolated carefully and 10 to 15 c.cm. of collargol are injected into its lumen with a trocar. The patient is kept in bed on a sedative régime for four days. The collargol remains in the vesiculæ seminales for some time—for at least four days and sometimes as long as three weeks. The immediate and remote results of this method make it very satisfactory for the treatment of infected vesiculæ seminales.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee 35 cases were considered and £388 10*s.* voted to 25 applicants. The following is a summary of some of the cases relieved:—

Son, aged 15, of M.D. who died in 1922. Found living in undesirable surroundings. A reputable firm gave him a job as telephone boy, but he was found quite incapable of doing the work. The Fund has been asked to help with maintenance, as a home has been found for the lad where he will have every care and attention. Arrangements have been made for private tuition, as his educational attainments are below those of a National schoolboy. It is suggested that two years' rudimentary education should be given in his spare time. It is hoped that other assistance will be forthcoming as the boy has the address and manners of a gentleman's son, though his education has been totally neglected. Fund voted £26 in four quarterly instalments towards his maintenance.

Widow, aged 60, of M.R.C.S. Eng. who practised in London and died in 1908. Dependent on daughter, aged 36, who teaches French in Paris. Mother and daughter live in one room at a cost of Fr.1115 and the latter receives Fr.700 a month. She has been ill and the Fund has been approached to help in their distress. Voted £12 in 12 monthly instalments of £1 each, and a special grant of £5. Previous relief since 1913 amounted to £106.

Widow, aged 71, of M.R.C.S. Eng. who practised in London and died in 1913. Has a small cottage outside London and supplements her small income of £30 per annum by letting, from which she has received £41 during the last twelve months. A friend has given £20 and she has been able to pay her way, but asks for assistance for repairs as the rooms are in a bad condition for letting. Voted £15. Previous relief since 1916 amounts to £28.

Daughter, aged 76, of M.R.C.S. who was in the R.A.M.C. and died in 1891. A condition of residence in a home is an income of £40 per annum and the applicant received only £32 per annum from the War Office. Fund voted £20 in four quarterly instalments. Previous relief since 1921 amounts to £70.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, London, W. 1.

NEW NURSES' HOME AT WEST DERBY.—An extension of the nurses' home has been opened at the Alder Hey Hospital, Knotty Ash. This hospital was built in 1914 and has nearly 1000 beds, chiefly used for the treatment of tuberculous and deformed children. The nursing staff of 200 includes 160 pupils in training, and the new extension, which almost doubles the accommodation, has cost about £17,000.

Correspondence.

"Audi alteram partem."

THE EX-BABY.

To the Editor of THE LANCET.

SIR,—I was much interested in reading your annotation in THE LANCET of July 24th, and at once referred to the report of the Westminster Maternity and Child Welfare Conference in your issue of July 17th. My special interest refers to the gap in medical supervision between infancy and school entrance pointed out by Dame Janet Campbell. This gap I have myself drawn attention to more than once in connexion especially with squint. The subject of squint seems to have been mentioned but not enlarged upon at the Welfare Conference. Yet squint and its underlying principal ætiological factor, the refraction error, are together of such importance to the visual efficiency of the nation that I would ask you, Sir, by way of emphasising the importance of the "ex-baby," to allow me to quote from two recent communications of my own. At the Ophthalmological Congress at Oxford in 1924, in my opening paper upon the treatment of squint,[1] I said:—

"May I put theory on one side and say that taking juvenile squints all over, everyone will agree that the earlier we can establish a meticulous optical correction after the appearance of the squint the greater will be the number of cases which improve in visual acuity and ultimately recover? Nevertheless, our object and ideal should be the correction of the refraction error before the squint occurs. This ideal seems at the present moment impossible to reach on account of the obvious difficulty of examining children of pre-school age."

Again, at the 1926 Congress of the Ophthalmological Society, U.K., when dealing with Birth Injuries of the Eye, the following will be found (when the Transactions for 1926 are published) in my opening paper:—

"At this point I would like to express my conviction of the value which could be obtained from a link record of each individual from birth to school age. School medical statistics are capable of providing a record back to 5 or 6 years of age of any child. If only we could have the medical history from birth to school age I feel convinced we should be able to obtain light on a variety of subjects."

A letter to the Editor is not the place in which to enlarge upon a subject of this kind, yet my very considerable experience of children's eye diseases as ophthalmic surgeon to a large education authority impels me to encroach upon your space in order to support Dame Janet Campbell's plea for the filling of the gap in general medical control of the child to which she has referred.—I am, Sir, yours faithfully,

Stirling, July 27th, 1926. ERNEST THOMSON.

To the Editor of THE LANCET.

SIR,—The gap in our organisation for the care of the child of pre-school age, to which attention has been drawn by Dame Janet Campbell, and on which you comment in your issue of July 24th, does not exist everywhere, and would not have existed anywhere if, in 1918 the Government had made the Maternity and Child Welfare Act compulsory in place of optional, and if the powers which this Act gives were faithfully carried out by local authorities. In many of the areas where the Act has been adopted—and certainly in this city—there is no gap. Children are supervised by the maternity and child welfare officials from their antenatal period to the end of the fourth year, and while it cannot be contended that the supervision is anything like complete, it may justly be claimed that there is no gap. The first centre day in every month at each of the 11 centres in Newcastle is devoted exclusively to children aged from 1½ to 5 years, and in 1925 2000 of these children attended our centres 16,000 times.—I am, Sir, yours faithfully,

A. F. G. SPINKS,
Maternity and Child Welfare Medical Officer, Newcastle-upon-Tyne.

July 29th, 1926.

[1] Trans. Ophth. Soc., U.K., 1924.

CERTIFICATION OF INCAPACITY FOR WORK.

To the Editor of THE LANCET.

SIR,—A memorandum has just been issued to insurance practitioners by the Minister of Health on the above subject. It is a surprise to me that it has not been forthcoming at an earlier date. Under the present regulations an insured person is free to change his doctor whenever he likes, the obvious result being that if his doctor will not certify him unfit he at once changes to one who will. As long as the panel doctor is subject to a threat of changing doctors if he does not carry out his patient's wishes, the increase in certification is bound to take place. It is obvious to any right-thinking person that a constant change of doctor at will in a Government medical service (and the panel service is obviously one) is subversive to any form of discipline. It is a mystery to me why the British Medical Association was so keen on it. Why not suggest it also for Navy, Army, and Air Force? The result is that in order to be a successful panel doctor the most important thing is to offer a certificate of incapacity to all who ask for it, whether they are sick or not; a knowledge of one's job is a secondary consideration. I know from personal experience that if one tries to do one's job conscientiously it is disastrous to one's pocket, and I strongly advise young men entering practice to avoid the panel as the devil would holy water. The panel service ought to be made a whole-time one at fixed salaries and pensions and discipline for patients, or else scrapped; at present it is a heartbreaking and degrading service for a doctor who wants to do his job conscientiously.

I am, Sir, yours faithfully,

Exeter, July 24th, 1926. CHARLES H. CARROLL.

THE DEFINITION OF DRUNKENNESS.

To the Editor of THE LANCET.

SIR,—An account has appeared in local newspapers of the trial and acquittal of a motorist alleged to be drunk, which occurred here recently.

As I am told that this is the first case of the kind to be tried at Quarter Sessions it may well be of national importance. According to the police evidence the accused could not stand or walk alone on admission to the police station. He called his own doctor, who examined him, but who was not called by the defence. Presumably, therefore, this doctor's evidence would not have been in favour of the prisoner. I saw the man shortly after the other doctor—that is, more than one hour after his admission to the cells. He was then familiar, jocular, flushed, and acted foolishly, as described in the paper; but he could walk all right and all his movements were fairly well coördinated. He came before the magistrates, but elected to be tried at Quarter Sessions. At the latter court I gave evidence, and when asked if he were drunk when I saw him, I said "Yes." Other witnesses, however, did not use this term, but simply said that he was, in their opinion, "under the influence of drink."

As this case may create a precedent it is very important to have an authoritative definition of the term "drunk." The jury apparently did not consider that a man who was "under the influence of drink," and whose judgment and discretion were obviously gone, was necessarily "drunk."

The man who is "drunk and incapable" is no danger to the public as he cannot drive a car. The man who is a real danger is one who is less inebriated, but who is self-confident and reckless, but who, if the above precedent be followed, will never be convicted.

The result of this trial will be to discourage the police from taking any action in such cases until some accident has occurred. In the Mental Deficiency Act, which deals with somewhat similar points as regards responsibility, definitions of what is meant by the terms "imbecile," "a feeble-minded person," &c., are given, and it is surely possible and quite

as important to define what is meant by the term "drunk" *as used in this recent Act*. This appears to be a point which might well be raised by the medical members in Parliament, or taken up more vigorously and without delay by the B.M.A.

I am, Sir, yours faithfully,

N. I. SPRIGGS, M.D., F.R.C.S.,
Leicester City Police Surgeon; Member of Executive Committee, Leicester and Rutland Division of B.M.A.

July 29th, 1926.

Obituary.

JOHN CHRISTIE McVAIL, M.D., C.M. ST. AND. AND GLASG., LL.D., F.R.F.P.S.G., D.P.H. CAMB.,

DEPUTY CHAIRMAN, NATIONAL INSURANCE, SCOTLAND.

WE regret to announce the death of John Christie McVail, who died on Thursday, July 29th, at the age of 77.

Born at Kilmarnock, he was the son of the late James McVail of that city, and was educated at the Universities of St. Andrews and Glasgow. He graduated in medicine at the former University in 1873, proceeding to the doctorate two years later, and was one of the first to take the newly-instituted Diploma of Public Health at the University of Cambridge. He practised in Kilmarnock for nearly 20 years, until he was appointed medical officer of health in 1891 for the combined counties of Stirling and Dumbarton, and we owe to Sir Leslie MacKenzie the following appreciation of McVail alike as a practitioner and as an official.

"My first meeting with Dr. John C. McVail was in 1891. He had been appointed medical officer of health for the combined counties of Stirling and Dumbarton. He was just winding-up his practice in Kilmarnock. I spent two days with him, and I began to understand the strength of intellect and will that enabled him to conduct a heavy private practice and yet to find time and energy for the general studies embodied in 'Vaccination Vindicated' and many other productions of those 18 years. A man of McVail's ambitions and brains would find new problems in any profession; but his interest in vaccination was a reaction to a great epidemic of small-pox. He could not be satisfied until he had gone into the whole problem. It is only a few years ago that, in a course of public lectures, he gave his estimate of the later developments. He was also in those days keenly interested in antiseptic surgery. He was a student when Lister taught; but he retained to the end a certain critical attitude about the data on which the Listerian propositions and practices were founded. He used to joke about the 'statistical conscience' and the way it operated in suppressing or 'explaining' unfavourable cases. But even in his practice in Kilmarnock the public health interest became manifest, and we may say that McVail passed into the health service because he had seen how much could be done if the organisation for prevention were once properly developed. Meanwhile his work on small-pox made him one with the chief medical officers of the English Local Government Board—Buchanan, Power, and others. When the Vaccination Commission was formed, McVail was, of course, a leading witness and adviser.

"The counties of Stirling and Dumbarton gave scope for his superabundant energies. For McVail was a big, strong man mentally as well as physically. He was by nature a man of power. He 'carried weight' and, in the 'nineties of last century, when county health organisation was a blank, McVail was just the kind of personality to do in his counties what men like Gairdner and Burn Russell (two much-admired seniors) had done in the city of Glasgow. He himself was senior to most of us. He rejoiced in argument. He could give and take hard hits; but always and everywhere he impressed men with his earnestness. And there was always at the end even of the warmest encounters the gracious laugh of the serious man whose imagination was on fire with great social movements.

"When the great Poor-law Commission was instituted, Dr. McVail was appointed a special commissioner to investigate certain phases of English Poor-law. The report he produced is among the best of the documents published by that Commission. It still repays study, for it contained many carefully-worded descriptions of actual conditions. It was not a sheaf of statistics; it was a thing of flesh and blood. Documents like these become permanent 'sources' for the research of the next generation. His main recommendation (the extension of the provident dispensary conception) did not impress me, but it reflected McVail's strongly 'voluntaristic' attitude.

"He had an immense belief in 'voluntaristic' methods of medical administration, and it was his strong bias in this respect that made him enthusiastic over the National Health Insurance Act of 1911. When that Act was passed, he was already 62—that is, within three years of the normal civil service superannuation age; but so keen was he to see the working of the great experiment from within that he asked and obtained the office of Medical Commissioner of the Scottish Insurance Commission. I wrote of him then that, though he was 62 years old, he had the working brain of 42.

"I could give many details of that landslide in the medical world. All I need say is that McVail at 62 had his greatest fight before him. At first he was acutely disappointed at the medical reception of the Act; but, as years went on, he grew more at ease in his feelings, and, from his double experience first in practice, then in administration, he probably helped to prepare the way for the larger developments now emerging in health administration. He certainly did a great deal to emphasise the preventive aspects of medicine. This was the note of all his public utterances for his ten years of Government service.

"Incidentally, when the Scottish Board of Health was formed, McVail became a member of it by transference, and thus a friendly coöperation begun when we were medical officers of health continued between colleagues in the same department of the civil service.

"Like all distinguished medical officers of health, McVail had his full share of Parliamentary and Commission work. He was a strenuous advocate, and never failed to impress committees and commissions as a man of grasp and sincerity. It would take me too long to tell of his work in housing, lecturing, and propaganda. It is enough to say that he never became indifferent to new movements. He kept touch with the younger generation of medical men.

"It was in October, 1925, that I met him for the last time at the annual meeting of the London School of Hygiene. It was his seventy-fifth birthday. He looked as bright and keen as that evening when I was his guest at THE LANCET centenary dinner. But, knowing the truth, I could see in his face little lines that told me their story. But he kept in the fighting line as long as physical strength permitted him. As late as November last year he took the chair at a meeting of the Epidemiological, and sent me a message to come. His mind remained young and active to the end. It was a profound gratification to talk with him. We always wandered into the larger questions of politics and social evolution, sometimes exchanging much argument on the more subtle questions of philosophy. He belonged to a generation of men that included Gairdner, the two Cairds, Kelvin, Lister, Burn Russell, and to all of these, as to McVail, it was part of their religion to look at life as a whole and not to let any section of it draw the mind into mere specialism or the character into mere fanaticism. McVail was a big man, and I am glad to have known him for five-and-thirty years."

In 1908 McVail became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow, and from the University he later received the hon. degree of LL.D., and his numerous appointments speak of the public esteem in which he was held. He was at the time of his death President of the Epidemiological Section of the Royal Society of Medicine, he was an ex-president of the Society of Medical Officers of Health, and was for ten years Crown Member for Scotland upon the General Medical Council, succeeding his brother Sir David McVail. In 1906 he was Lane lecturer of the Cooper Medical College, San Francisco, a foundation which has always attracted from England the famous exponents of our science in every direction. In 1919 he delivered the Milroy lectures for the Royal College of Physicians of London, taking as his subject "Half a Century of Small-pox and Vaccination."

He was a prominent member of the British Medical Association, where he held many offices, and from the Royal Society he received the Jenner Medal. In Scotland he acted as an examiner of medical jurisprudence and also in public health at all the four Universities of St. Andrews, Edinburgh, Glasgow, and Aberdeen, while he was also on the examining body of the Scottish Conjoint Board.

McVail was a clear and fearless writer, as he showed nearly 40 years ago in "Vaccination Vindicated," to which reference has already been made. He returned to this subject, treating vaccination as a branch of preventive medicine in a contribution to Allbutt and Rolleston's "System of Medicine," and a little later wrote for the Transactions of the Epidemiological Society a summary of the work of the Royal Commission on Vaccination with a review of the statement of dissentient statements. The results of his work as medical investigator to the Royal Commission on Poor-law made up a large section of that report, while to the Transactions of the Sanitary Institute and in the *British Medical Journal* and THE LANCET he made many important contributions. Much of the work which he did for THE LANCET was editorial in nature, and throughout many years we found in McVail a wise counsellor on all questions of public health, especially where public rights and professional privileges appeared to make imperfect contact.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 24TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 91 (last week 157); scarlet fever, 1274; diphtheria, 895; enteric fever, 86; pneumonia, 436; puerperal fever, 44; cerebro-spinal fever, 7; acute poliomyelitis, 16; acute polio-encephalitis, 3; encephalitis lethargica, 39; dysentery, 6; ophthalmia neonatorum, 113. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, none from enteric fever, 14 (3) from measles, 3 (0) from scarlet fever, 31 (3) from whooping-cough, 25 (10) from diphtheria, 68 (12) from diarrhœa and enteritis under two years of age, and 20 (2) from influenza. The figures in parentheses are those for London itself.

WORK OF HOSPITAL SATURDAY FUNDS.—Birmingham Hospital Saturday Fund is about to enlarge Tyn-y-Coed, the Fund's convalescent home for men at Llanrhos, which claims to have been the first convalescent home of its kind in the world. Since 1892, when Tyn-y-Coed was opened, more than 107,000 patients have passed through the Fund's five homes, and there are 252 cases waiting for admission at Llanrhos. Last year the Birmingham Hospital Saturday Fund exceeded £62,000, and there is now only one large firm in the city which stands outside it.—The Leicester and County Saturday Hospital Society is about to build, at a cost of between £25,000 and £30,000, a convalescent home for children at Woodhouse Eaves, on the edge of Charnwood Forest. During the 23 years of the society's existence it has raised £456,000 for the Leicester Royal Infirmary and convalescent homes, and more than 25,000 patients have received free convalescent treatment.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on July 29th the following degrees were conferred:—

M.D.—J. Rickman and *F. A. Barker.

M.B. and B.Ch.—J. W. Hope Simpson, K. G. Salmon, P. E. Bardsley, R. S. Starkey, J. D. M. Stewart, and D. P. Marks.

M.B.—F. W. Roques.

B.Ch.—*L. G. Higgins, T. F. Fox, G. G. Holmes, F. G. Winterton, A. W. Spence, *B. C. Tate, V. B. Wigglesworth, and J. H. Hannan.

* By proxy.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—Diplomas of L.R.C.P. and M.R.C.S. have been conferred on 177 candidates (138 men and 39 women), who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates:—

R. M. Ainsworth, Liverpool; C. E. H. Anson, King's Coll.; J. R. Armstrong, Edinburgh, Cambridge, and St. Bart.'s; H. Y. Awad, St. Thomas's; W. Baker, Leeds; B. Barling, Univ. Coll.; J. T. Barr, King's Coll.; A. K. Basilios, Cairo and Birmingham; Florence I. Beech, Birmingham; W. F. D. Benton, St. Bart.'s; P. Berry, Guy's; W. Blood, London; Hilda M. P. Bond, St. Mary's; Mabel C. Booysen, Charing Cross; M. D. Bower, Oxford and St. Thomas's; Ellen W. M. Bridge, Liverpool and Manchester; R. C. Brock, Guy's; R. D. W. Butler, Cambridge and Birmingham; P. J. L. Capon, St. Thomas's; Rose A. Carter, Royal Free; *Alison M. Clark, Royal Free and St. Mary's; E. V. Claydon, London; A. P. L. Cogswell, King's Coll.; *A. H. F. Cole, Durham; R. G. Cooke, Liverpool; Constance M. Corbett, Westminster; F. R. Corfe, St. Bart.'s; Annie A. Corp, Punjab and Royal Free; J. B. Crabtree, St. Bart.'s; A. T. Curnow, Guy's; P. J. Curran, National Univ., Ireland, and London; K. J. J. Cursetji, Bombay and St. Bart.'s; W. W. Darley, St. Bart.'s; E. A. Darukhanawalla, Bombay and Middlesex; *L. Dass, Punjab and Middlesex; J. R. A. Davies, Cambridge and St. Bart.'s; Mirabel G. Davis, King's Coll.; C. A. Day, St. Bart.'s; H. I. Deitch, Middlesex; H. A. H. D'Silva, Madras and King's Coll.; C. W. L. de Souza, St. Bart.'s; Sheila Dewar, Cambridge and London; G. Dignam, Manchester; Irene Dixon, Charing Cross; Jean M. Dollar, Royal Free; M. H. C. Dyson, Univ. Coll.; J. P. Evans and R. Evans, Guy's; S. N. Evans, Singapore and Guy's; G. L. Feneley, Bristol; C. Fernando, Ceylon; R. F. Fidler, Middlesex; G. W. S. Foster, St. Bart.'s; E. O. Fox, Cambridge and London; Elsa C. A. Fristedt, Royal Free; R. Gallimore, Cambridge and London; R. C. Germond, Lausanne and London; F. Goldby, King's Coll.; B. W. Goldstone, St. Mary's; E. D. Y. Grasby, Guy's; W. P. Greenwood, St. Bart.'s; J. L. Groom, Cambridge and Guy's; R. G. Hall, Charing Cross; Kathleen M. Halloran, Calcutta and Charing Cross; T. J. Hargest, Cardiff and Middlesex; C. H. Harper, St. Thomas's; S. T. Harris, Charing Cross; J. C. Hawksley, Univ. Coll.; G. G. Hill, Oxford and London; W. S. Hinton, St. Bart.'s; A. S. Hollins, Cambridge and King's Coll.; M. F. Hope, King's Coll.; W. G. S. Hopkirk and Nancy G. Howell, Univ. Coll.; J. H. Humphris, Cambridge and St. Bart.'s; W. T. Hunt, St. Mary's; D. H. Isaac, Cardiff; Mary R. Isaac, Madras and Royal Free; R. Jarman, Guy's; B. S. Jarvis, Liverpool; B. C. Jennings, Birmingham; Mary Jennings, Royal Free; J. D. F. Johnstone, Cape and Univ. Coll.; A. N. Jones, Liverpool; E. D. Jones, Cardiff and St. Bart.'s; J. P. Jones, St. Mary's; B. Kaplan, Cape and Guy's; Gladys Kay, Royal Free; W. A. Kerr, Cape and King's Coll.; H. Kesselson, Charing Cross; W. R. Kirkpatrick, Madras and Guy's; J. H. Kitson, Manchester; Olive C. Knight, Charing Cross; S. C. H. Lane, Guy's; W. Leslie, Cape and Guy's; Isabella L. H. Livingstone, King's Coll.; A. L. St. A. McClosky, St. Mary's; R. G. MacGregor, Oxford and St. George's; R. M. B. Mackenna, Cambridge and St. Thomas's; C. W. Mackenzie, Oxford and London; E. H. Mackenzie, St. Thomas's; J. H. Marshall, Birmingham; W. N. Mascall, Cambridge and St. Thomas's; A. J. M. Melly, Oxford and St. Bart.'s; Bertha I. Meyer, Royal Free; Anna P. Montgomery, Charing Cross; A. W. J. Morgan, London; J. Morris, Cambridge and St. Thomas's; Margaret E. Morton, Royal Free; L. Moss, London; I. Muende, Charing Cross; Kathleen A. Muir, Cambridge and King's Coll.; Dorothy L. Neate, Royal Free; E. J. Newman, London; Norah M. A. Niall, Charing Cross; H. P. O'Keeffe, London; M. N. Oster, Westminster; C. L. Owen, Cambridge and Univ. Coll.; J. G. Paley, St. Bart.'s; F. Parker, Cardiff and St. Bart.'s; Isabel D. Patterson, London; R. A. M. Pennington, Liverpool; G. H. Pereira, St. George's; D. Perkoff, London; R. K. Phillips, Bristol; M. M. Posel, St. Bart.'s; E. I. Puddy, St. Mary's; E. J. Pye-Smith, Cambridge and Guy's; W. F. H. Ray, Oxford and Manchester; W. D. B. Read, Oxford and Guy's; Violet M. H. Rendall, St. Mary's; Doris Reynolds, Royal Free; J. R. W. Richardson, Guy's; F. T. Ridley, Birmingham; Bertine M. Rix, St. Mary's; Phyllis Routledge, Durham; E. S. Rudaizky, Guy's; S. E. Saint, London; A. Y. M. Salama, St. Thomas's; W. Samarasinghe, Ceylon and Middlesex; W. E. Savage, Manchester; H. N. Seymour-Isaacs, St. Bart.'s; A. Signaiewsky, Guy's; R. W. A. Simmons, Oxford and St. Thomas's; H. Sissons, Manchester; E. W. Skipper, London; Peggie P. Slater, Cardiff and

Westminster; S. Smith, St. Bart.'s; J. R. C. Spicer, Guy's; J. B. Stauffer, London; K. R. Stokes, St. Bart.'s; Stella C. C. Stuart, Royal Free; R. D. Summers, London; M. M. Suzman, Durham; B. C. Tate, Cambridge and Birmingham; E. D. Thomas, Middlesex; L. H. Thomas, Oxford and St. Thomas's; Mary Thomas, Univ. Coll.; R. Thomason, Birmingham; S. R. Trick and J. M. Turner, Guy's; Dorothy I. Valentine, Liverpool; Nora A. Vane-Percy, Allahabad and Charing Cross; G. F. Vincent, St. Thomas's; J. E. Wallace, Liverpool; S. H. D. Wallis, Guy's; Kathleen M. Ward, Liverpool; R. F. Ward, London; T. H. Wehlburg, St. Bart.'s; A. G. Welker, Westminster; D. F. Whitaker, Univ. Coll.; E. G. Williams, Leeds; H. P. Williams, King's Coll.; Jane C. Williams, St. Mary's; Elizabeth E. Wintringham, Royal Free and St. Mary's; H. L. C. Wood, King's Coll.; and R. E. Yule, St. Thomas's.

* M.R.C.S. diploma previously conferred.

The undermentioned diplomas have also been conferred :—

DIPLOMA IN PUBLIC HEALTH.

E. G. Anthonisz, C. M. Brown, Lily C. Butler, C. K. Cullen, P. P. Daruvala, E. F. Duck, E. James, J. V. Landau, Janet M. MacKay, Catherine J. Maclaren, R. C. Mahajan, J. A. Struthers, T. Tennent, W. D. R. Thompson, Cicely Weatherall, and M. J. Whelton.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.

R. A. de C. Basto, S. N. Chau, G. S. Chowdhary, W. J. L. Duncan, K. Eweida, S. Fraser, D. Hardie, S. H. G. Humfrey, R. Lang, E. H. Lim, A. M. MacGillivray, A. McGlashan, E. G. Mackie, M. S. Mahmood, M. C. Mason, H. B. Owen, T. G. W. Parry, W. L. Peacock, T. Pearson, H. Rai, P. R. S. Rao, G. P. N. Richardson, F. W. Robertson, Nina L. D. Robertson, W. J. Roche, K. G. W. Saunders, H. Singh, S. G. Sorabji, T. C. Taik, H. K. Tucker, M. L. Watts, and L. E. J. Werner.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

G. W. J. MacKay, J. R. A. Madgwick, J. T. H. Madill, A. R. Martin, L. Minski, and A. C. Sinclair.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.

T. A. Clarke, A. L. Clowes, A. O. Davy, J. D. Dhruv, P. Garson, W. J. Macdonald, C. S. C. Prance, M. J. Quraishi, B. T. Rao, B. D. Uberoi, and J. R. Wheeler.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on July 29th, the President, Sir John Rose Bradford, being in the chair.—Dr. D. R. Paterson, Dr. G. E. C. Pritchard, and Sir George Buchanan were admitted to the Fellowship. The following having passed the required examinations and satisfied the Censors' Board were elected Members, and all but Dr. Simpson were admitted :—

Janet K. Aitken, Julia Bell, Shankar S. Bhatnagar, Harold G. Bird, Edward R. Boland, William Brockbank, Norman F. C. Burgess, Vincent M. Coates, Daniel T. Davies, Durga R. Dhar, Victor W. Dix, Helen W. Duncan, Chester K. Dunstan, Iris M. Harmer, Kenneth E. Harris, Richard A. P. Hill, Alfred B. Hodgson, John Holmes, John A. Innes, Reginald S. Johnson, Edmund B. Jones, Alexander H. Kirker, Louis Lavine, Terence C. Morton, Herbert W. Pearson, Edward S. Phipson, Cyril J. Polson, Dewan H. Rai, Thomas P. Rees, William A. Robb, Hugh A. Robertson, John D. Rolleston, John W. Simpson, Sidney Smith, and George H. Wickens.

Licences to practise medicine were granted to 176 candidates who had passed the recent examinations and a number of diplomas were granted jointly with the Royal College of Surgeons.—A report was received from the examiners for the Murchison Memorial Scholarship, and the scholarship was awarded to Dr. C. E. Newman and *proxime accessit* Dr. P. B. Wilkinson, both of King's College Hospital.

The following officers were appointed for the ensuing year :—

Censors.—Dr. H. Morley Fletcher, Dr. Walter Carr, Dr. Robert Hutchison, and Dr. F. J. Poynton.
Emeritus Treasurer.—Sir Dyce Duckworth.
Treasurer.—Dr. Sidney P. Phillips.
Registrar.—Dr. Raymond Crawfurd.
Harveian Librarian.—Dr. T. H. Arnold Chaplin.
Assistant Registrar.—Dr. R. O. Moon.
Members of the Library Committee.—Dr. F. Parkes Weber, Dr. H. C. Cameron, Dr. W. C. Bosanquet, and Dr. C. J. Singer.
Curators of the Museum.—Dr. J. Mitchell Bruce, Sir Frederick W. Andrewes, Sir Seymour J. Sharkey, and Dr. William Hunter.
Finance Committee.—Dr. A. G. Phear, Dr. John Fawcett, and Dr. J. H. Thursfield.
Examiners.—Chemistry: Mr. R. H. A. Plimmer and Mr. W. H. Hurtley. Physics: Mr. J. H. Brinkworth and Mr. Sidney Russ. Practical Pharmacy: Dr. Nathan Mutch, Dr. Hugh Gainsborough, Dr. W. J. Adie, Dr. V. J. Woolley, and Dr. Orlando Inchley. Physiology: Prof. B. J. Collingwood and Prof. Swale Vincent. Pathology: Sir Frederick Andrewes and Dr. Charles Bolton. Anatomy: Prof. G. Elliot-Smith. Medical Anatomy and Principles and Practice of Medicine: Sir Percival Horton-Smith Hartley, Dr. A. G. Phear, Dr. W. C. Bosanquet, Dr. C. R. Box, Dr. Herbert S. French, Dr. J. A. Nixon, Sir John Charlton Briscoe, Prof. F. S. Langmead, Dr. C. E. Lakin, and Dr. J. A. Torrens. Midwifery and Diseases peculiar to Women: Dr. Cuthbert H. J. Lockyer, Sir Henry J. F. Simson, Mr. Malcolm Donaldson, F.R.C.S., Dr. William Gilliatt, and Dr. Stanley Dodd.
Examiners in Public Health.—Dr. J. H. Ryffel and Dr. C. Porter.
Tropical Medicine.—Sir P. W. Bassett-Smith and Sir Leonard Rogers.
Ophthalmic Medicine and Surgery.—Dr. J. S. Collier.
Psychological Medicine.—Part I.: Dr. E. D. Macnamara. Part II.: Dr. R. P. Smith and Dr. C. M. Hinds Howell.
Laryngology and Otology.—Dr. D. R. Paterson.

The President announced that he had appointed Sir William Hale-White to deliver the Harveian Oration in 1927, and that he had awarded the Bisset Hawkins Medal, 1926, to Dr. A. T. Stanton.—A committee was appointed to consider the arrangements that should be made by the College duly to celebrate in 1928 the Tercentenary of the first publication of Harvey's "De Motu Cordis."—A communication was received from the Secretary of the Medical Research Council asking the President to nominate two Fellows to confer with that Council on the question of continuing the issue of *Medical Science Abstracts and Reviews*. Lord Dawson and Dr. Fawcett were nominated.—The President reported to the College communications with the Home Office concerning the barbitone group of drugs.—The Registrar reported the following acceptances of appointments: Sir Donald MacAlister, as delegate to the Conference of the National Association for the Prevention of Tuberculosis at Glasgow; Dr. A. J. Hall as delegate at the Celebration of the Coming of Age of the University of Sheffield; Dr. H. R. Spencer as FitzPatrick Lecturer for 1927; Sir J. Charlton Briscoe as Lumleian Lecturer for 1927; Dr. Charles Bolton as Croonian Lecturer for 1928; Dr. F. R. Fraser as Goulstonian Lecturer for 1927; Dr. C. G. Douglas as Oliver Sharpey Lecturer for 1927; Dr. P. C. Varrier-Jones as Mitchell Lecturer for 1927; Dean Inge as Lloyd Roberts Lecturer for 1926, in place of Prof. Arthur Thomson (resigned). The date of the lecture has now been changed to Friday, Nov. 19th, at 5 P.M.—Various reports of committees were received and the report of the Departmental Committee on the University of London was discussed.—The President then dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council on July 29th, Sir Berkeley Moynihan, the President, in the chair, the President stated that the vacancy in the Court of Examiners occasioned by the resignation of Mr. Herbert S. Pendlebury would be filled up at the ordinary meeting of the Council on Dec. 9th. Sir Anthony Bowlby, Sir D'Arcy Power, and Mr. Sampson Handley were elected members of the Executive Committee of the Imperial Cancer Research Fund. The President said that, as arranged with Prof. von Eiselsberg, the Lister Memorial Lecture would be delivered at the College on Thursday, July 7th, 1927. He proposed that a reception should be held in the Museum before the lecture, and that the annual election of members of Council should be held on the morning of the same day.

Licences in Dental Surgery were conferred upon A. S. Akehurst and S. C. Clouts.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the undermentioned subjects :—

Surgery.—A. C. F. Barrow, Edinburgh; A. Henkamp, Gottingen and Royal Free Hosp.; and R. F. Middleton, Birmingham.
Medicine.—N. H. Allen, Guy's Hosp.; F. W. Barton, Middlesex Hosp.; T. M. Beattie, Leeds; W. O. H. Evans, St. Mary's Hosp. and Bristol; J. B. Lurie, St. Thomas's Hosp.; R. I. Richards, St. Bart.'s Hosp.; and G. E. Rowan, St. Thomas's Hosp.
Forensic Medicine.—C. S. Forrest, Middlesex Hosp.; H. S. Littlepage, Birmingham; J. B. Lurie, St. Thomas's Hosp.; R. F. Middleton, Birmingham; T. E. Moody Jones, St. Bart.'s Hosp.; A. K. Rama Chandra, Edinburgh; G. E. Rowan, St. Thomas's Hosp.; R. S. S. Smith, St. Bart.'s Hosp.; and M. Stinnesbeck, Freiburg and Royal Free Hosp.
Midwifery.—A. C. Banerji, Charing Cross Hosp.; H. J. J. Fordham, St. Mary's Hosp.; D. Jacobson, St. Bart.'s Hosp.; V. K. Samy, Dundee; M. T. Y. Selim, Liverpool; R. S. S. Smith, St. Bart.'s Hosp.; and T. de L. Walker, King's Coll. Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: W. O. H. Evans, R. F. Middleton, and G. E. Rowan.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—The Council has awarded the following scholarships and bursaries for the session 1926–27: Isabel Thorne Scholarship, H. M. Brown (Trinity Hall, Southport); St. Dunstan's Medical Exhibition, E. J. Adams Clark (St. Paul's Girls' School); Sir Owen Roberts Scholarship, R. E. Chamings (L.S.M.W.); Mabel Sharman Crawford Scholarship, P. Farncombe (Godolphin School); Alfred Langton Scholarship, P. D. Towell (L.S.M.W.); Flora Murray Bursary, M. M. Fenn (L.S.M.W.); Fanny Butler Scholarship, R. B. Snow (St. Mary's Hospital); and Dr. Edith Pechey-Phipson Post-graduate Scholarship, G. H. Newell, M.B., B.S.

POST-GRADUATE MEDICAL COURSES IN BERLIN.—International post-graduate medical courses are to be held in Berlin from Oct. 4th to 30th. They will be organised jointly under the medical faculty of the Berlin University, the organisation of the Empress Friedrich-House, and the assembly of academical lecturers. There will be a course on advances in general medicine with due regard to the latest therapeutics from Oct. 4th to 16th; a course in urology from Oct. 18th to 30th; and courses in the special departments of medicine from Oct. 18th to 30th and from Oct. 4th to 30th. Further particulars may be had from Kaiserin Friedrich-Haus, Berlin, N.W. 6, Luisenplatz 2–4.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special course in diseases of children is to be given at the Queen's Hospital from August 16th to 28th. Both medical and surgical practice will be dealt with by demonstrations, lectures, and operations. Tea and a simple lunch will be provided by the staff, and graduates will have access to all parts of the hospital during the course. From August 23rd to Sept. 4th the Queen Mary's Hospital, Stratford, will give an all-day course for the benefit of those who wish to renew their acquaintance with hospital practice. A new pathological department and maternity wards have recently been opened at this hospital. Regular courses in obstetrics are now offered at the City of London Maternity Hospital and practical courses in anæsthetics can be arranged on application to the Fellowship. In September special courses will be held in diseases of infants, electro-therapy, ophthalmology, orthopædics, and psychological medicine. There will also be an intensive course in medicine, surgery, and the specialties. Copies of all syllabuses, of the general course programme, and of the *Post-Graduate Medical Journal* may be had from the Secretary at 1, Wimpole-street, London, W. 1.

LONDON POST-GRADUATE HOSTEL.—On July 27th Sir William de Courcy Wheeler took the chair at a meeting of the Hostel at the Imperial Hotel, London, when Prof. H. Finsterer (Vienna) opened a discussion on operations of the stomach, in which he advocated gastrectomy for all cases of ulcer. It was not altogether fair, he said, to compare the results of gastro-enterostomy with those of gastrectomy, as the former could often be done successfully by any surgeon, whereas gastrectomy should be performed only by experts. In their hands it yielded better results than gastro-enterostomy, but if it were universally practised the mortality would increase greatly. In his experience the greater the part of the stomach removed the better the ultimate prognosis; he quoted several cases in which success had only been reached after several partial operations, when almost all the organ had been removed. Sir William Wheeler emphasised the importance of the signs as distinct from the complications of carcinoma, and referred to the diagnostic value of a course of arsenic in deciding between carcinoma and anæmia. On July 30th Sir George Lenthal Cheatle opened the discussion on the difference between hyperplasia and inflammation, drawing his conclusion from the study of the breast. It was possible, he said, to have a cell which was potentially malignant yet held in check by the basement membrane; if such a cell were transplanted, rapid malignant growth ensued. Age was important, and what was inflammatory in a tar-worker of 30 was definitely malignant in a man of 50. So-called chronic mastitis was actually hyperplasia of one of the component parts of the gland or its duct. He pleaded for systematic examination of all parts of a breast removed for nodular growth owing to the frequent presence of early carcinoma.

Details of the next discussion at the hostel will be found in the Medical Diary given in another column.

MILK AND THE PUBLIC HEALTH.—At the annual meeting of the National Veterinary Association of Great Britain and Ireland, held last week in Dublin, there was a discussion on the relations between the milk-supply and the public health. Mr. P. F. Dolan, Chief Veterinary Inspector of Dublin, said that the immediate complete eradication of tuberculosis from milch cows was impracticable on account of the high percentage of animals affected. It was possible that by getting rid of the cow with tuberculosis of the udder and of cases of generalised tuberculosis, and by producing the milk under clean conditions, the amount of tubercle bacilli in it would be reduced to a minimum. Mr. A. Gofton, Chief Veterinary Officer for Edinburgh, said that milk legislation in Great Britain was too drastic and too drastically enforced. The tendency to reduce the available supplies and consequently raise the price would have the effect of driving the poorer classes to buy skimmed milk and substitutes that did not contain what children needed. Milk which was to be pasteurised ought to be of good quality. Dr. M. J. Russell, medical officer of health for Dublin, advocated periodical medical inspection of those who handle milk.

AN Order will be issued by the Ministry of Health making notifiable puerperal pyrexia other than that which is already notifiable as puerperal fever.

LONDON HOSPITAL MEDICAL COLLEGE.—The entrance Scholarship in Pathology offered to members of the Universities of Oxford and Cambridge has been awarded to Mr. G. E. Lewis, of Christ's College, Cambridge.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—Dr. R. M. Morris has been awarded a Lalcaca Medal in addition to that gained by Dr. R. Crawford, these two students having obtained an equal percentage of marks in the school examinations of 1926.

THE offices of the Panel Committee for the County of London were removed on August 3rd from Staple House, 51–52, Chancery-lane, W.C. 2, to 17–18, Russell-square, W.C. 1. Pending the installation of a telephone at the new premises, urgent inquiries may be made to Museum 4464.

LISTER CENTENARY CELEBRATION.—The centenary year of Lord Lister's birth will be celebrated in Edinburgh in July, 1927, during the meeting of the British Medical Association. The committee responsible for the celebration are anxious to interest students and young graduates in the significance of Lister's work, and they offer a prize of a gold medal and £25 for the best essay on the Influence of Lister on the Evolution of Surgery. Registered students and graduates of not more than one year's standing of any medical school of the British Empire are eligible to submit essays, which must be written in English and must not exceed 10,000 words in length. They should be typed on one side of paper only, and must be sent by May 1st, 1927, to Prof. J. Fraser, Convener of the Lister Memorial Committee, 32, Moray-place, Edinburgh. The award of the prize will be made at the Lister Celebration Meeting, July, 1927.

POISONS AND PHARMACY ACTS.—As already announced in THE LANCET (July 24th, p. 208), a committee has been appointed to consider and report whether any modifications are necessary or desirable in the Poisons and Pharmacy Acts: (1) In regard to the conditions relating to the sale of poisons; (2) in regard to the procedure for the modification or extension of the Schedule of Poisons to which the Acts apply; (3) in the system of making and enforcing regulations in regard to the keeping, selling, and dispensing of poisons; (4) in regard to the Central Authority for the purposes of the Acts; and (5) in regard to any other matters to which the attention of the committee may be drawn. Any person, association, or firm wishing to give evidence or place their views before the committee should communicate as soon as possible with Mr. M. D. Perrins (Joint Secretary), Home Office, Whitehall, S.W. 1. The committee will inquire generally into the existing machinery regulating the sale (retail and wholesale), keeping, distribution, and supply of poisons; any consideration of proposals for the inclusion in or exclusion from the Schedule of Poisons of any specific substance is *not* held to fall within the committee's terms of reference.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.—The seventh annual general meeting of this Society was held on July 28th, Dr. J. H. Sequeira being in the chair. A resolution was unanimously carried urging the Government "to grant facilities to the Venereal Disease Act, 1917, Amendment Bill in view of the support that it has received from the British Social Hygiene Council and the Society for the Prevention of Venereal Disease and the medical Members of the House of Commons." The Chairman suggested that the society should adopt as its motto Sir George Newman's statement that "The first duty of medicine is not to cure disease but to prevent it." The attention of the meeting was drawn to the lately published report on the Health of the Army for 1924, which records a remarkable fall in the incidence of venereal disease during the last four years—a fall which the report attributes to the advance made in prevention, diagnosis, and treatment and to vigorous propaganda. Mr. H. Wansey Bayly, the hon. secretary, gave a detailed résumé of the Society's work during the past year, and said that "not only in this country, but throughout the civilised world there are indications that there has developed an appreciation of the danger of neglect of the venereal menace and a recognition that education in immediate self-disinfection is one of the important means of meeting this drain on the health, industry, and purse of nations and individuals." Mr. Basil Peto, M.P., was elected President of the Society, and said that all the medical Members of Parliament with one exception, and many lay Members of all political parties, had promised their support to a Bill to amend the Venereal Disease Act, 1917, so as to permit the sale by chemists of approved disinfectants, accompanied by approved printed instructions as recommended in the report of Lord Trevethin's Committee of Inquiry. Mr. Harry Machin, the hon. treasurer, emphasised the need for public financial support of the Society.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Rural Housing Bill.

ON Wednesday, July 28th, Mr. NEVILLE CHAMBERLAIN, Minister of Health, presented in the House of Commons a Bill "to promote the provision of housing accommodation for agricultural workers and for persons whose economic condition is substantially the same as that of such workers and the improvement of such accommodation by authorising the giving of financial assistance towards the reconstruction and improvement of houses and other buildings." The Bill was read a first time.

Factories Bill.

Sir W. JOYNSON-HICKS, Home Secretary, presented in the House of Commons on Monday, August 2nd, the Factories No. 2 Bill, a measure to consolidate with amendments the enactments relating to factories. The Bill was read a first time.

Midwives and Maternity Homes Bill.

On Monday, August 2nd, Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) moved that the House doth agree with the new clause inserted in the House of Lords giving power to exempt certain institutions from Part II. of the Bill. The motion was agreed to. Subsequent amendments inserted in the Bill by the House of Lords were also agreed to.

Vivisection.

On Tuesday, August 3rd, Lieut.-Commander KENWORTHY presented a petition signed by 1109 persons in Barrow-in-Furness, 142 in Bromley, 980 in Chiswick, 646 in Eastbourne, 648 in Nottingham, 251 in Rochester, and 400 in Tunbridge Wells praying that the practice of vivisection be prohibited by law.

Lead Paint Poisoning.

On Tuesday, August 3rd, the House considered the Lead Paint (Protection against Poisoning) Bill, as amended in Standing Committee. The Bill was read a third time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 28TH.

PUBLIC HEALTH IN SCOTLAND.

On the report of a vote of £3,680,342 for public education in Scotland,

Mr. WESTWOOD moved to reduce the vote by £100. He said he wished to raise the question of the feeding of children during the coal mining dispute. Several education authorities in Scotland refused to feed the children during the holidays, and it was rather regrettable that in some instances the lead in this matter had been taken by ministers of the Gospel. There had been some doubt in the minds of the education authorities as to their power to feed children during the holidays. At least one local authority and certain parish councils had asked for the opinion of the Dean of the Faculty of Advocates. The Dean had given it as his opinion that not only had the authorities such power, but that it was their duty to feed the children during the holidays. He believed that there was an earnest desire on the part of the Secretary for Scotland and the Under Secretary to see that there was no unnecessary suffering to the people during this great industrial struggle, but he appealed to them to see that all the authorities in Scotland did their duty in this connexion.

The LORD ADVOCATE said that he found himself quite unable to agree with the opinion of the Dean of the Faculty of Advocates as to the obligation or power of the education authority to feed necessitous school-children during the holidays. The relief which it was the duty of parish councils to provide in respect of a child might not necessarily be the same as the relief in the shape of meals which an education authority was to provide under the Act of 1908. The education authority's duty arose where they found a child was not in a condition owing to lack of food or clothing to take full advantage of the education course. It would be seen at once by those who were familiar with the Poor-law that there might be cases in which there was a duty on the parish council to provide relief in respect of a child, although the child would still be perfectly capable of receiving and taking in proper education, and, therefore, the two cases did not necessarily meet. It might be that parish councils had not carried out their duty, and then, of course, the education authorities might have discovered a case of a child arriving at school improperly fed, but neglect of administration did not alter the construction of the Statute. Of course, circumstances might arise which would alter cases. He would demur from the legal point of view to this habit of education authorities passing general resolutions that they were not going to deal with a certain class of case with regard to school feeding. It was the duty of the education authority to deal with each case individually, and not to say that they were going to grant relief in this or that class of case. That was a misapprehension of their duty.

Dr. SHIELS said the Lord Advocate seemed to indicate that the legal position was that parish councils were responsible for feeding the children, and only in the event of their failing to do so should the education authorities take action. While that might be the legal position, he thought they ought to reflect that here were two public bodies each having the power of feeding children of school age. Personally, he would much prefer that the education authority should feed such children and that the Poor-law should be kept out of it altogether, if possible. Where communal feeding in the school was given the actual expense to the ratepayers was much less. He trusted that whatever the legal position the education authorities would continue to be empowered to feed children of school age.

Sir JOHN GILMOUR, Secretary for Scotland, said there was nothing to prevent coöperation between the education authorities and the parish councils in this matter, and arrangements could very often be made more economically after consultation so that the actual feeding should take place at the school. There ought, however, to be no alteration in the carrying out of the law in the terms in which the Lord Advocate had explained it, and the responsibilities of the parish council ought to be fully accepted.

The motion to reduce the vote was negatived and the vote was agreed to.

On the report of a vote of £1,858,345 for the salaries and expenses of the Scottish Board of Health, expenses of administration under the National Insurance Acts, &c.,

Mr. JOHNSTON moved the reduction of the vote by £100. He said that the position of housing in Scotland was rendered doubly unsatisfactory because of the hesitancy of the Government in informing the municipalities exactly what form of subsidy they were likely to have in October next. Everything was being held up. They required 20,000 houses per annum in Scotland, but they were getting less than 8000. In Dundee 11·3 of the population lived more than three persons to one room. There were 4000 houses where the people were living more than three to one room. They had 4000 persons living in houses which had been officially scheduled as unfit for human habitation, and they had 1000 families living in a share of a room—two or more families for one room—and the Prime Minister himself, when he visited the city, expressed himself as horrified with the conditions which he saw there. The medical officer of health had urged a great development in house building. If the Government withdrew the subsidy and threw them back on what was falsely called "an economic rent" that meant according to figures worked out by the sanitary inspector in Dundee that this alleged economic rent would be £1 per week for a working-class house. Who was to pay this £1 per week? The wages of many workers were such that they could not possibly pay such a rent. He suggested as a means of getting cheaper houses in Scotland that the municipalities should be encouraged to set up municipal banks and that they should be allowed to set the unemployed to work making building materials. By these means the Secretary for Scotland could double the output of houses in Scotland; but he could not do it by stopping the subsidy. If he stopped the subsidy he simply sentenced hundreds of thousands of people to an early death.

Mr. JAMES BARR said that in the report of the Scottish Board of Health reference was made to the Hospital Services (Scotland) Committee presided over by Lord Mackenzie. That report revealed a very alarming state of things in regard to public health in Scotland and in regard to the inadequacy of hospital services. For example, medically the hospital accommodation was exceedingly inadequate. That meant for all requiring hospital treatment the prolonging of their suffering, for some it meant that they were obliged to wait until it was much too late for them to have any chance of recovery, and for many it meant that they died before admission to the hospital could be secured. He admitted that much had been done in regard to hospital accommodation. In 1841 in Glasgow 17 per 1000 of the population were admitted to hospital, but in 1924 the figure had risen to 44·9. But when they examined the waiting lists at these hospitals as revealed in the report they found that there were often more people on the list than there were beds in the hospital. If they took the six teaching hospitals, as they were called, in the four principal cities of Scotland they found that they contained 3256 beds and that there was a waiting list of 5854. It was true that the waiting lists had to be sifted, but there still remained the fact that the Committee calculated that there was need for 3600 new beds in Scotland to meet the urgent demands of sick people. There was the greatest dearth of hospitals for incurables. There were only eight such institutions with 602 beds.

The children's hospitals in Glasgow, Edinburgh, and Aberdeen were also declared by the Committee to be inadequate. The Poor-law hospitals were in many cases carried on in buildings that were originally constructed not as hospitals but as workhouses or for the housing of the poor. While they had in Glasgow some splendid hospitals conducted by the parish council authorities, on the whole they suffered very greatly in equipment and buildings which were inferior in every way.

In the Minority Report of the Poor-law Commission in 1909 it was asserted that two-thirds of the sick poor were being tended in what were really workhouses, although they were called hospitals. Another important point was the stigma of the Poor-law which attached to the sick poor. He was glad that the report recommended the transfer of the Poor-law hospitals to the general system of hospitals and that the very best treatment should be given to the poorest people. The hospitals under the local authorities were confined to certain specific diseases, but the list of diseases had been expanded and now amounted to 37. In regard to certain forms of disease, such as pulmonary tuberculosis, the Committee thought that with the schemes which were in view, as well as those which now existed, there was sufficient accommodation for the present. In regard to other forms of disease, such as non-pulmonary tuberculosis, the Committee believed that there was great inadequacy and great urgency. He believed that the whole responsibility should be thrown upon the local authorities in a new way and the whole system broadened out. As to finance the Committee calculated that to provide 3600 beds a sum of £1,800,000 would be required, of which they recommended that half should be met by a State grant. It appeared to him to be pathetic that these hospitals should depend upon appeals of a varied character, on street collections, and on appeals to the gambling instinct. He hoped that the Government were looking forward to a much more comprehensive scheme by which the very best treatment would be given to all without distinction. Considering the inadequacy of the medical equipment he thought it was remarkable that so much had been done. They found, for example, that last year's death-rate for Scotland was 13·4, or 1 per cent. less than in 1924. The infantile death-rate was 90·5, a figure which had only been twice reached in Scotland—in 1921 and in 1923. The death-rate for boys and girls under 5 years was down to 12, a figure which he thought had only once before been touched in Scotland. The pulmonary tuberculosis rate was down to 76, which he believed was a record not only for Scotland but for the United Kingdom, and the non-pulmonary rate was down to 34. Social reformers could take great heart, hope, and courage from a long-stretched consideration of the way in which the death-rate had been brought down. In 1855, a normal year in Glasgow, the annual death-rate was 32 per 1000; now it was down to 13·25. The infantile death-rate in 1860, a normal year in Glasgow, was 182, and now it was 101, and for the whole of Scotland it was less than one-half of what it was in 1860 in Glasgow. But a great deal remained to be done.

It was significant to look at the death-rates of other countries, although they had to bear in mind certain considerations such as differences of climate and the like; but he thought that it was far more due to advance in sanitary and medical service. The death-rate in Sweden was 11·4, Norway 11·14, Canada 9·8, and in New Zealand 8·29. If they took the infantile death-rate, which stood in Scotland at 90·5, they found that in Sweden it was 56, in Norway 50·66, and in New Zealand 40·23. In Glasgow there was an enormous disparity between one ward and another. For example, the death-rate in Cathcart was 9·33 and in Mile End 17·93. The infantile death-rate was 27 in Langside, 31 in Cathcart, and 137 in Mile End. Last year in Mile End it was 162. To further the interest of public health they have to seek to equalise the social conditions in a city and thus they would save a multitude from death. Housing reform would be a most effective means of improving health and diminishing the death-rate. According to the report of the Royal Commission on the Housing of the Industrial Classes in Scotland, 1917, on the basis of the census of 1911, it was found that the death-rate among boys under 5 years in one-roomed houses was 50·56, in two-roomed houses 30·2, in three-roomed houses 17·9, and in houses of four rooms and upwards 10·27. They were advancing because of a new mental attitude towards disease—a recognition that it was not inevitable, and was not a part of a providential system of the world. The Labour party desired to see the whole health service made a public service and the best medical skill available to all persons without distinction. The health of a nation was its greatest asset.

Brigadier-General CHARTERIS said that Mr. Barr had given statistics of progress in meeting health requirements which were highly satisfactory. But it seemed to him that however greatly they might try to meet the requirements of an ever-growing population they would fall short of doing all that was necessary unless they could take some steps to restrict unnecessary immigration from other parts of the kingdom into Scotland. The result was that the available housing accommodation was hard pressed and there was an adverse influence on public health. He hoped that the Secretary for Scotland would give this matter the close attention it deserved.

Mr. T. KENNEDY raised the question of the future of health insurance administration in Scotland through the local insurance committees. The whole of the public health administration on this side, he said, was in the melting-pot, and they were very near important changes and far-reaching developments. The Royal Commission had made reference in its report to the status, work and future of these committees and definitely recommended that the local committees should cease to function at an early date and that their work should be transferred to some appropriate municipal or county committee. That proposal was made on the ground that there was need for a concentration of local health administration. The committees were charged with responsibility for the arrangement of health insurance benefit and for inquiries into complaints by insured persons, and they organised health lectures and health propaganda generally. This part of their work would have been even more extensive if the committees had had more funds at their disposal. In view of these facts he thought that they should seriously consider before they agreed to abolish these committees. The matter was being considered by the Scottish Office and the Ministry of Health, but no indication had been given of what action the Government proposed to take in regard to it. He would be very sorry to see Scotland dragged at the tail of England in this matter. Scotland ought to adopt its own policy as it had done on medical matters relating to insurance administration. He believed that the approved societies were almost universally opposed to this new recommendation. If the unification pleaded for by the Royal Commission was to be applied on grounds of administrative economy, and it could be proved that it would lead to more efficient management, he would not be prepared to oppose rigidly a new departure on that line. But if any departure was to be made it should not merely take the form of abolishing the present insurance committees and vesting their powers and duties in a public committee, but they ought to make the health service a completely public service maintained out of public money.

Mr. BUCHANAN said he wished to raise the question of venereal disease and also the treatment of the blind. He wished to urge on the Scottish Office the need for more rapid expansion in the treatment of venereal disease. He understood that medical attention in Glasgow and Edinburgh, for instance, was not sufficient to give sufferers from that disease the treatment which they ought to get. In Glasgow it was not uncommon to have between 30 and 40 cases in a night, and persons who were not given attention very often did not apply again. He hoped that the Secretary for Scotland would spend a little time and money in equipping these hospitals both from the surgical and medical point of view with nurses and doctors and also appliances for the treatment of the disease. In connexion with blind persons he would ask if the Secretary for Scotland could not take action on their behalf. According to the annual report of the Scottish Board of Health a consultative committee had been set up representing the various interests—the blind societies, the local authorities, education, and municipal. How often was that committee called together? He had had complaints that it had not met frequently enough during the past year. Another complaint he had was that throughout Scotland, with Dundee as a bright exception, there was a long waiting list of blind persons anxious to receive training which they could not get. He hoped that economy would not be allowed to stand in the way of the welfare of the blind.

Dr. SHIELS said he wished to raise the questions of light treatment for tuberculosis and for child welfare and rickets. He would be glad if the Scottish Board of Health would encourage local authorities to go in for the installation of artificial sunlight because in regard to surgical tuberculosis, rickets, and general debility the results had been very remarkable. He quite agreed with the criticism of the Board that this was not to be regarded as a panacea for all ills, but he thought that its scope would be more and more extended, and that it would ultimately become one of the most useful therapeutic agents. With regard to the new milk legislation he would like to ask the Under Secretary what he thought of the nomenclature of the present graded milk sold under license from the Board of Health. He had found that a great many people thought that Grade A milk was the best standard of milk, whereas it was only the third standard, and it was possible for Grade A milk to be actually tuberculous. The Certified milk was the first quality and the Grade A Tuberculin-tested the second quality. He suggested that simply to describe the qualities as A, B, and C, or something of that kind, would be very much simpler for the public. With regard to the medical inspection of school-

children they had practically 50,000 children who had been certified as being insufficiently nourished and about 1300 who were certified as being very much under nourished. That was a condition of affairs in Scotland which was very unsatisfactory and ought to make them ashamed. He would also draw attention to the large number of children who were suffering from enlargement of tonsils, especially in connexion with the later chapter in the report in regard to rheumatic fever. They knew that tonsils in a bad condition were a frequent cause of rheumatic fever—one of the most disabling of diseases and one which was of great economic importance.

Major ELLIOT, Under Secretary to the Scottish Board of Health, replying to the debate, said that the difficulties in regard to housing were still great, but there was no doubt that progress was being made. He agreed that the future of the local insurance committees could not be settled by the *obiter dictum* of the Royal Commission and that a strong case would have to be made out before the Government consented to the abolition of the committees. With regard to the Hospitals Report he would call attention to the very specific declaration made by his right hon. friend in the last debate on this vote to the effect that the Board of Health were taking this matter into their closest scrutiny and hoped in course of time to make considerable developments in the direction of providing an increased number of beds. With regard to venereal disease he agreed that the Broomielaw centre in Glasgow was not entirely satisfactory. Further building was going on there, however, and they hoped considerably to improve the situation. The International Convention with respect to venereal disease had recently been ratified and in future the disease would be dealt with in accordance with the terms of the Convention. He thought that he might say on behalf of the Secretary for Scotland and H.M. Government that the question of the abolition of the housing subsidy was not being considered by the Government at the present time.

The motion to reduce the vote was rejected by 315 votes to 129 and the vote was agreed to.

Pay of Naval Sick Berth Ratings.

Mr. HORE-BELISHA asked the First Lord of the Admiralty whether, in view of the Government decision to give effect to the recommendations of the committee appointed to consider questions relating to pay and other matters affecting recruitment of officers and nurses to the medical branches of the fighting services, he would state if the sick berth staff would benefit by these recommendations, seeing that they were a definite part of the nursing section of the Navy.—Mr. DAVIDSON, Parliamentary Secretary to the Admiralty, replied: The terms of reference of the committee did not include consideration of the sick berth ratings and the reply is therefore in the negative.

New Sick Berth Staff Quarters at Plymouth.

Mr. HORE-BELISHA asked the First Lord of the Admiralty when it was proposed that the sick berth staff should occupy their newly built quarters at the Royal Naval Hospital, Plymouth, which were completed over three months ago.—Mr. DAVIDSON replied: The new quarters are expected to be occupied very shortly.

Opium in India.

Mr. SCURR asked the Under Secretary of State for India whether the Government of India proposed to introduce further legislation against opium smoking in clubs and dens.—Earl WINTERTON replied: This is a provincial subject. The Legislative Councils of the Punjab and of the United Provinces have passed Acts prohibiting opium smoking assemblies of three or more persons, and of two or more persons respectively. The Government of Assam contemplate introducing similar legislation.

Coroners' Courts in India.

Mr. SCURR asked the Under Secretary of State for India whether it was the intention of the Government of India to establish coroners' courts in the principal cities of India similar to that established in Bombay, and to cease the conducting of inquests by the police authority.—Earl WINTERTON replied: There is a coroner also in Calcutta. In other parts of India an inquest is not necessarily held by a police officer. Magistrates of certain classes have power to hold inquests and do hold them. The law is contained in Sections 174 to 176 of the Code of Criminal Procedure, 1898. I know of no proposal to change it.

Cancer Research.

Colonel DAY asked the Minister of Health the amount of money expended during the last three years, from public funds, in connexion with cancer research work.—Mr. NEVILLE CHAMBERLAIN replied: The expenditure from public funds directly assignable to cancer research during the three years ending March 31st, 1926, amounted to approximately £20,000, in addition to the use of a stock of radium worth £50,000, which is the property of the Government. This figure does not include any portion of the salaries of permanent officers of the Ministry of Health who are engaged in this work, nor does it take account of the cost, not readily estimated separately, of the work upon cancer undertaken by the scientific staff of the Medical Research Council at the National Institute for Medical Research. The Council's expenditure upon research in the more primary parts of the medical sciences which is as necessary for the solution of the cancer problem as the direct study of the disease itself, has also materially advanced the knowledge of the subject.

Feeding of Necessitous School-children.

Mr. TINKER asked the President of the Board of Education the number of local authorities who had put into operation the feeding of necessitous school-children; how many had commenced since the coal mining dispute started; and how many children were being fed under this scheme at present.—Lord E. PERCY replied: During the week ended July 17th, 1926, the latest date for which complete returns are available, 157 authorities were exercising their powers to provide meals, and 258,670 children were being fed. Forty authorities have started to provide meals since the coal stoppage began.

Silicosis Among Miners.

Mr. WILFRID PALING asked the Secretary for Mines the number of mine workers reported as suffering from silicosis in each of the years from 1915 to 1925 inclusive.—Colonel LANE-FOX: Silicosis among mine workers is not a disease required to be reported, and detailed information is, therefore, not available, but the number of cases is known to be small, and so far as coal miners are concerned is almost negligible.

Office Sanitation.

Viscount SANDON asked the Minister of Health whether he had yet arranged for a test case to be tried as to the powers of local authorities with regard to office sanitation; and, if not, if he intended to do so this year.—Mr. NEVILLE CHAMBERLAIN replied: I cannot myself arrange for a test case to be tried, but I hope that it may be found possible through the initiative of local authorities to obtain a decision in the near future.

Unknown Disease at Poplar.

Viscount SANDON asked the Minister of Health whether he would publish the results as soon as available of the medical investigations into the recent unknown epidemic in Poplar; and whether he would take all possible steps to secure its elucidation.—Mr. NEVILLE CHAMBERLAIN replied: All possible steps have been taken to elucidate the cause of this outbreak. Bacteriological investigations are being continued, but so far have yielded no positive result. If and when a conclusion has been reached as to the nature of the outbreak I shall be glad to have the information published.

Board of Control and Lunacy Certification.

Mr. R. RICHARDSON asked the Minister of Health if he was aware that a communication was recently sent to the Board of Control by a bench of magistrates commenting on the lack of a proper scrutiny exercised by that Board into the grounds upon which persons were committed to asylums, instancing the case of a Mrs. Mary de Freville who was committed last month on a doctor's certificate to Gloucester county asylum, placed in a padded cell, and, when examined by the doctor in charge, sent home as perfectly sane; and, in view of the fact that the Board had itself admitted in its report for 1923 that 22 cases committed in the previous year were found to be sane on admission, would he give directions that certification in all these cases should be declared invalid and their names erased from the roll of lunatics, in order to protect them from the detriment attaching to the stigma of lunacy.—Mr. NEVILLE CHAMBERLAIN replied: Mrs. de Freville was admitted to the Goucester Mental Hospital on the 9th ultimo on the authority of an order made by a Justice of the Peace. Copies of the reception documents were received by the Board of Control on the 14th ultimo with an intimation that the patient had been discharged on the 11th, the medical superintendent being of opinion that she was not then of unsound mind. There is no question of any lack of proper scrutiny by the Board, because the patient was, in fact, discharged three days before the documents reached the Board. I should, however, state that in the opinion of the Board the facts observed by the certifying doctor at the time of his examination appear to have afforded ample ground for the conclusion that the patient was at the time of unsound mind and in need of care and control. With regard to the latter part of the question, it is erroneous to assume because symptoms of insanity are not found on admission that, therefore, these symptoms were not present at the time of certification and that the patient was improperly certified. It is not possible to invalidate the certification of the persons referred to in the question. They were sent to mental hospitals under proper legal authority and on discharge their names were removed from the list of certified

patients. I appreciate, however, that some amendment of the law may be desirable to facilitate the provisional observation and treatment, without full certification, of doubtful or transitory cases of mental disturbance and this will be considered in connexion with the recommendations of the Royal Commission whose report has just been issued.

Lead Poisoning in the Potteries.

Mr. RHYS DAVIES asked the Home Secretary the number of persons suffering from lead poisoning in the potteries in 1925 and in the first half of 1926; how many were men and how many women; and how many of these cases were among workers who should have been covered by the special regulations of 1913 desgned to protect them against lead poisoning.—Sir W. JOYNSON-HICKS replied: The number of cases for 1925 was 47, of which 24 were male and 23 female workers. For the first half of 1926 there were 28 cases —14 of either sex. All these workers were employed in processes to which the regulations of 1913 app'y.

The University of London Bill.

Dr. LITTLE asked the Prime Minister if the University of London Bill [Lords] would be taken before the adjournment for the summer recess.—Mr. BALDWIN replied: I am afraid I see no propsect of making progress with this Bill before the recess.

MONDAY, AUGUST 2ND.

Women Factory Workers in Bombay.

Mr. ROBERT YOUNG asked the Under Secretary of State for India the number of factory women workers in the Bombay presidency; whether there were any women factory inspectors; if so, how many; and when these were appointed.—Earl WINTERTON replied: The number of women workers in factories was 72,679 in 1924. One lady inspector was appointed in that year.

Outcrop Workers and Health Insurance.

Mr. WRAGG asked the Minister of Health whether the men employed on outcrop mining had their health insurance cards regularly stamped.—Sir KINGSLEY WOOD replied: Insurance cards are required to be stamped for men so engaged if they are employed under a contract of service, but not otherwise. If my hon. friend will give me particulars of any case which he may have in mind, I will have inquiries made.

Protection of Civilians Against Gas in Warfare.

Mr. AMMON asked the Prime Minister whether a gas mask sufficiently reliable to resist the newest discoveries in gases for use in warfare had been invented; and what steps the Government proposed to take to bring such to the attention of the civilian population and to provide instruction in the use of such protective measures.—Mr. BALDWIN replied: There is every reason to believe that protective measures are keeping abreast of current developments in gas warfare.

Inspection of Foreign Meat Carcasses.

Sir DOUGLAS NEWTON asked the Minister of Health whether he proposed to seek powers to inspect bacon factories and carcasses purchased by them from abroad.—Mr. NEVILLE CHAMBERLAIN replied: Officers of local authorities already have powers under the Public Health Acts to enter bacon factories and inspect all carcasses found therein. I may add that all carcasses imported into this country are liable to inspection at the port of entry.

Lead Poisoning in the Potteries.

Mr. RHYS DAVIES asked the Home Secretary whether he was aware that there had been cases recently in the potteries where young girls had suffered from attacks of lead poisoning similar to those which were frequent before the introduction of the 1913 special regulations; whether he could account for these cases; and what steps he intended to take to enforce the regulations with a view of stamping out the disease.—Sir W. JOYNSON-HICKS replied: I find that during the last 18 months there have been three reported cases of lead poisoning among girls under 21 employed in the potteries. All three cases, I am glad to say, were slight. I regret it has not been possible to ascertain definitely how these attacks arose. The most careful attention is paid to the enforcement of the regulations, but so far as the factory inspector could discover, none of these cases was due to any breach of the regulations or to any defect in the working of the process.

TUESDAY, AUGUST 3RD.

Venereal Disease in the Army.

Mr. BASIL PETO asked the Secretary of State for War whether he would see that in the next report on the health of the Army the figures relating to the incidence of venereal disease were brought up to date and that a report would be included as to the effect of preventive and other measures taken to reduce it.—Sir L. WORTHINGTON-EVANS replied: As regards the first part of the question, the statistics relating to diseases in the Army cannot be compiled until the information is received from all Commands, both at home and abroad, which in the case of India is not until July of the year following that to which they refer. It is hoped that the report for 1925 will be ready for publication by the end of the current year. As regards the second part of the question, reference to page 17 of the report for the year 1924 will show that reference is already made to the effect of preventive and other measures.

Fatal Accidents in the Mining Industry.

Lieut.-Colonel HENEAGE asked the Secretary of Mines the number of fatal accidents in the mining industry of Great Britain per 10,000 men for 1922–23, 1923–24, and 1924–25; and if he could obtain similar figures for the Russian mines.—Colonel LANE-FOX replied: The number of separate fatal accidents in the mining industry of Great Britain was at the rate of 9 per 10,000 persons employed in 1923, 1924, and 1925. At Russian mines the corresponding numbers were eight in the year ended September, 1924, and ten in the following year. Particulars for 1922–23 are not available.

Miners and Silicosis.

Mr. WILFRID PALING asked the Secretary for Mines whether any cases of silicosis had been reported which were alleged to have been caused through operating the stone-dusting regulations applying to coal mines.—Colonel LANE-FOX replied: The allegation has occasionally been made, but every case in which it has been made it has proved on investigation not to be silicosis.

Accidents to Pedestrians in London.

Mr. CAMPBELL asked the Minister of Transport whether there had been any and, if so, how many, accidents to pedestrians as a result of the roundabout system of traffic in various parts of London.—Sir W. JOYNSON-HICKS replied: I will circulate a statement of the number of accidents to pedestrians which have occurred, so far as known to the police, at each of the places where the system has been introduced, but it is impossible to say whether any and, if so, how many of these accidents have occurred as the result of the introduction of this system. I am glad to say none of the accidents has been fatal. The statement referred to gives the number of accidents to pedestrians at places where the gyratory system of traffic regulation is in force. The figures given in each case apply from the date of institution of the system to July 27th, 1926, inclusive:—

Place.	Date of institution of gyratory system.	No. of accidents.
Parliament-square	Jan. 4th, 1926 ..	16
Queen Victoria Memorial ..	Jan. 25th ,, ..	4
Hyde Park Corner	March 22nd ,, ..	13
Aldwych	Oct. 12th ,, ..	8
Trafalgar-square	April 26th ,, ..	11
Piccadilly-circus	July 26th ,, ..	—
King-street, Hammersmith	,, 26th ,, ..	—
		52

Cost of Poor-law Relief.

Sir FREDERIC WISE asked the Chancellor of the Exchequer the total amount paid in Poor-law relief in England and Wales for 1925 and from Jan. 1st to March 31st, 1926, and from April 1st to June 30th, 1926.—Sir KINGSLEY WOOD replied: Figures for indoor relief during the periods mentioned are not yet available. The total amounts of domiciliary Poor-law relief given in money and kind in England and Wales were:—

In the year ending December, 1925 ..		£14,550,356
,, quarter ,, March, 1926 ..		£4,123,738
,, ,, ,, June, 1926 (approx.)		£5,545,000

Lunacy Law Reform.

Mr. ROBERT RICHARDSON asked the Minister of Health if his attention had been drawn to the recent decision in the Court of Appeal in the case tried in April last of Harnett *v.* Fisher, from which it resulted that if any sane person was wrongfully shut up in an asylum for six years he was debarred from redress; and would he at an early date initiate legislation to remove this.—Sir KINGSLEY WOOD replied: My right hon. friend is advised that the deduction which the hon. Member draws from the decision of the court in this case is too wide. As regards legislation, my right hon. friend can add nothing to the answer given on May 3rd, beyond saying that he has under consideration the recent report of the Royal Commission on Lunacy Law and Administration.

Relief to Miners' Wives and Children.

Mr. RHYS DAVIES asked the Minister of Health whether he was aware that the Bolton board of guardians had decided to continue their refusal to grant outdoor relief to miners' wives and children, one of the grounds being that a decision of the board could not be altered for six months after the date of such decision; and whether he would

intervene in such a way as to remove this obstacle to a change in the board's policy if they so desired.—Sir KINGSLEY WOOD replied: Yes, Sir. My right hon. friend is aware of the decision of the Bolton guardians and that a motion for its rescission which was fully discussed and rejected by 27 votes to 15 on July 14th, was ruled out of order on the ground suggested on July 28th. It is not in his power to intervene in the manner suggested, but he has no doubt that if the majority of the board desired to alter the present decision, some way would be found of dealing with any difficulty arising from their standing orders.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs. to be Surg. Capts.: T. B. Shaw, P. L. Crosbie, C. K. Bushe, and T. W. Myles.

Surg. Lt.-Comdr. M. B. Macleod to be Surg. Comdr.

Surg. Lt. W. J. McB. Allan to be Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. R. Wilbond has been awarded the Royal Naval Volunteer Reserve Officers' Decoration.

ROYAL ARMY MEDICAL CORPS.

Bt. Col. W. R. P. Goodwin to be Asst. Dir.-Gen.

F. Widlake to be Temp. Lt.

The undermentioned retire on retd. pay and are granted the rank of Lt.-Col.: Majs. F. L. Bradish and E. J. Kavanagh.

Maj. D. T. MacCarthy retires on retd. pay.

Maj. T. W. O. Sexton to be Maj. whilst empld. under Article 507 (*b*), Royal Warrant for Pay and Promotion, 1926.

TERRITORIAL ARMY.

Lt. G. B. Tait to be Capt.

Capt. K. V. Bailey, late Manch. R., to be Lt. and relinquishes the rank of Capt.

2nd Lt. H. R. Paterson, late R.F.A., to be Lt.

Hygiene Companies: 2nd Lt. D. Lamont, late R.G.A., T.F., to be Lt.

ROYAL AIR FORCE.

J. Twohill is granted a short service commission as a Flying Officer for three years on the active list.

INDIAN MEDICAL SERVICES.

Maj. R. E. U. Newman officiates as Assistant Director of Hygiene and Pathology, Western Command, vice Maj. J. W. Houston. Maj. J. G. Gill has been appointed Deputy Assistant Director of Hygiene, Central Provinces District, vice Maj. G. P. Taylor, deceased; and Maj. C. A. Wood has been appointed Deputy Assistant Director of Medical Services, Southern Command, vice Maj. W. E. R. Williams, vacated. Capt. R. D. Davy officiates as Deputy Assistant Director of Medical Services (Embarkation) at Karachi, vice Maj. P. G. M. Elvery; Capt. S. Nag officiates as Specialist in Surgery at Jappulpore, vice Capt. D. J. Batterham; and Maj. P. M. Rennie has been posted as Civil Surgeon, Amraoti. Capt. E. R. Daboo has handed over charge of the Jorhat Jail to Maj. H. L. Batra, civil surgeon, Sibsagar. Dr. K. B. Dustur on return from leave has resumed his appointment as Medical Officer of Health, Agra. Lt.-Col. F. P. Warwick, civil surgeon, Amraoti, and Dr. Y. B. Ranade, deputy, have been granted leave.

Appointments.

DUKE-ELDER, W. S., M.D. St. And., F.R.C.S. Eng., has been appointed Assistant Ophthalmic Surgeon to St. George's Hospital, London.

FREW, W. D., M.R.C.S., L.R.C.P. Lond., to be one of the Medical Referees under the Workmen's Compensation Act for the Kilmarnock District.

SIMPSON, HAROLD C., L.M.S.S.A., D.P.H., Assistant County Medical Officer of Health for Cumberland.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—Res. Surg. O. At rate of £200. Also H.S. At rate of £150.

Barnet, Wellhouse Hospital.—Asst. Res. M.O. £150.

Barnsley, Beckett Hospital.—Jun. H.S. £140.

Bath, Royal Mineral Water Hospital.—Res. M.O. £130.

Birmingham City Mental Hospitals.—Asst. M.O. £350.

Brentwood Mental Hospital, Essex.—Consulting Surgeon. 50 guineas.

Bristol University.—Asst. to Professor of Surgery. £400.

Cardiff, Welsh National School of Medicine.—Lecturer in Pathology. £750.

Carlisle, Cumberland Infirmary.—H.P. At rate of £155. Also Jun. H.S. At rate of £135.

Hastings, Royal East Sussex Hospital.—Hon. Clin. Asst. in X Ray Dept.

Leicester Isolation Hospital and Sanatorium.—Res. M.O. £350.

Manchester, Ancoats Hospital.—Res. M.O. £150.

Manchester, Crossley Sanatorium, Delamere Forest.—Asst. M.O. £200.

Manchester Hospital for Consumption, &c.—Res. M.O. £200.

Manchester Royal Infirmary.—Res. Clin. Path. £100. Also Cardiological Reg. £150.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Sen. Res. M.O. £250.

Northampton General Hospital.—H.P. and H.S. Each at rate of £150.

Poplar Metropolitan Borough.—M.O.H. £1100.

Queen's Hospital for Children, Hackney-road, E.—Phy. for Skin Dept.

Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.

Royal Chest Hospital, City-road, E.C.—Res. M.O. At rate of £150.

Royal Northern Hospital, Holloway-road, London, N.—Cas. O. At rate of £90.

St. Luke's Hospital, Cale-street, Chelsea, S.W.—First Asst. M.O. £420.

Salisbury, General Infirmary.—H.S. £150.

Sidmouth U.D.C.—Part-time M.O.H. £130.

Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.

Watford, Herts Peace Memorial Hospital.—Res. M.O. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bruton (Somerset), Earsdon (Northumberland), Horsham (Sussex), Hollingbourne (Kent), Newport (Isle of Wight), and at Hanley (Staffs.).

Births, Marriages, and Deaths.

BIRTHS.

ALLISON.—On July 27th, at Harlaw, Hope-terrace, Edinburgh, the wife of Dr. John Allison, Jun., Kettering, of a daughter.

WILSON.—On July 29th, the wife of Dr. H. Lydiard Wilson, Gordon-square, of a son.

MARRIAGES.

BLORE—YOUNG.—On July 28th, at the Parish Church, Halesowen, W. Roy Blore, M.C., M.B., B.S. Lond., to Margaret, daughter of Dr. and Mrs. Brett Young, of Halesowen, Worcs.

GRIPPER—SYMONS.—On July 28th, at Salisbury Cathedral, Captain Geoffrey Dawson Gripper, R.A.M.C., to Sylvia Clare, second daughter of the late Colonel F. A. Symons, C.M.G., D.S.O., A.M.S., and Mrs. Symons, of De Vaux Lodge, Salisbury.

PLATT—HERON-WATSON.—On July 28th, at All Souls', Langham-place, W., Lieut.-Commander Francis Cuthbert Platt, D.S.O., R.N., to Francis Heron-Watson, M.B., D.P.H., elder daughter of Charles Heron-Watson, The Croft, Longforgan, Perthshire.

TOOP—TRESILIAN.—On July 27th, at St. Andrew's Church, Enfield, Bernard Miall Toop, M.R.C.S., L.R.C.P., to Nora Mabel, younger daughter of the late F. J. Tresilian, M.D., F.R.C.P., and Mrs. Tresilian, of White Lodge, Enfield.

WALLACE—COUTTS.—On July 31st, at St. Peter's Church, Norbiton, Herbert Kelvin Wallace, M.R.C.S., L.R.C.P., L.D.S., to Marjorie, elder daughter of Dr Francis J. H. Coutts, C.B., and Mrs. Coutts, of Kingston Hill.

DEATHS.

HUNT.—On July 26th, suddenly, Lieut.-Colonel Rochford Noel Hunt, D.S.O., R.A.M.C., of Belgrave-road, Eccleston-square, S.W., aged 53.

MCVAIL.—On July 29th, at Nethway, Torquay, John Christie McVail, LL.D., M.D., D.P.H., in his 77th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, August 9th, to SATURDAY, August 12th.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Last week of the Special course of clinical demonstrations upon selected cases given at 5 P.M. as follows: Mon., Dr. Hildred Carlill: Hysteria. Tues., Dr. Hildred Carlill: Lesions of the Cranial Nerves. Wed., Mr. Cecil Wakeley: Cerebral Surgery. Thurs., Dr. Worster-Drought: Certain Points in Neurological Diagnosis.

POST-GRADUATE HOSTEL, Imperial Hotel, Russell-square, W.C.

THURSDAY, August 12th.—9 P.M., The Silhouette Radiogram in the Interpretation of Clinical Signs, by Mr. A. P. Bertwistle.